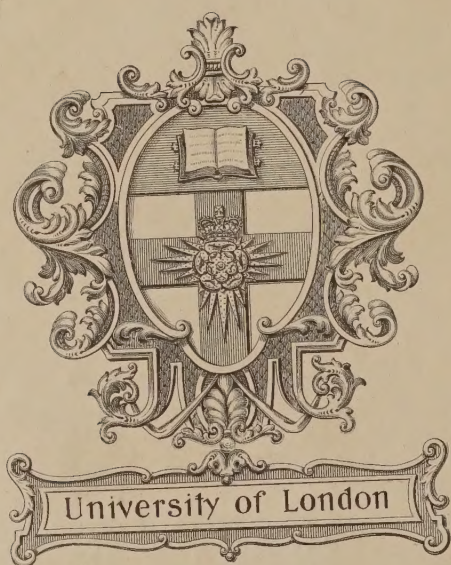
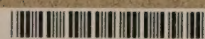






606159

ACCOUNTS AND PAPERS:

THIRTY-FIVE VOLUMES.

— (12.) —

EAST INDIA—*continued.*

RAILWAYS; SANITARY COMMISSIONS;
SYSTEMS OF GOVERNMENT; WEIGHTS AND MEASURES;
RANGOON AND WESTERN CHINA.

Session

19 November 1867 — 31 July 1868.

VOL. LI.

1867-8.

ACCOUNTS AND PAPERS;

1867-8.

THIRTY-FIVE VOLUMES:—CONTENTS OF THE TWELFTH VOLUME.

N.B.—*THE* Figures at the beginning of the line, correspond with the N° at the foot of each Paper; and the Figures at the end of the line, refer to the MS. Paging of the Volumes arranged for The House of Commons.

EAST INDIA—continued.

Railways:

- ✓ [4035.] Report to the Secretary of State for India in Council on Railways in India, for the Year 1867-68 - - - - - p. 1

Sanitary Commission, Bombay:

- ✓ 27. Report of the Sanitary Commission for Bombay, 1866 - - - 49

Sanitary Commission, Madras:

- ✓ 22. Report of the Sanitary Commissioner for Madras, for the Year 1866; with Appendix containing Medical Returns of the European and Native Troops, and Prisoners in Gaols; also, the Mortuary Returns of the Civil Population - - - - - 183

Systems of Government:

- ✓ 108. Despatch from the Government of India, dated 26th October 1867, enclosing Correspondence respecting British and Native Systems of Government in India - - - - - 431

Uncovenanted Service:

- ✓ 200. Number of Appointments in the so-called Uncovenanted Service in India, with a Salary of 500 *l.* per annum, and upwards, held by Europeans and Natives of India respectively - - - 555

Weights and Measures:

- ✓ 16. Report from the Committee of Weights and Measures to the Secretary to the Government of Bengal, dated the 25th July 1866; with other Papers on the same subject - - - - - 557

Rangoon and Western China:

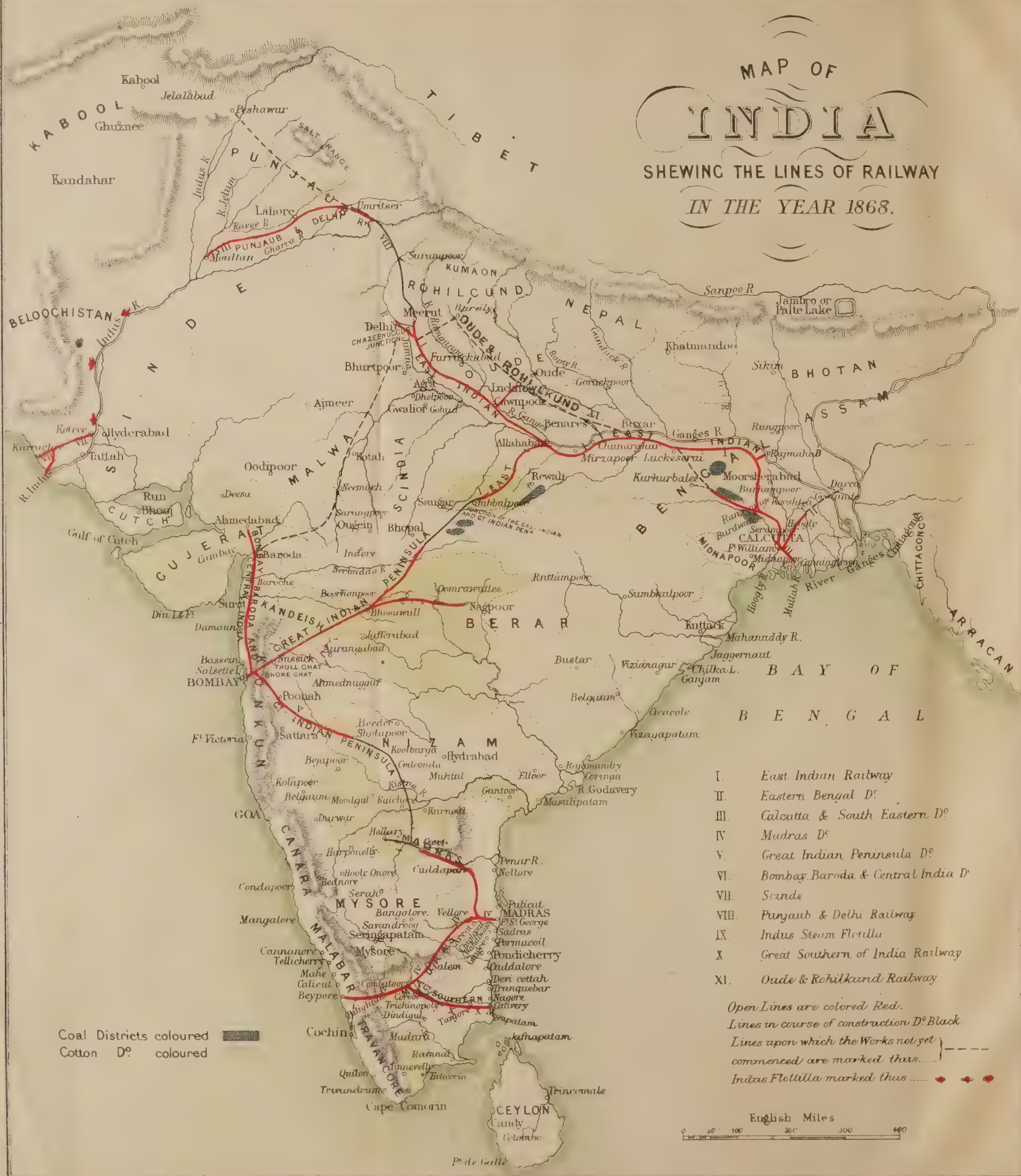
- ✓ 28. Memorials, and Letters transmitting them, to the First Lord of the Treasury or other Minister, subsequent to 7th December 1863, on the subject of opening up a direct Commerce with the Shan States and West of China, from the Port of Rangoon; and of the Replies thereto (in continuation of Paper, No. 5, of Session 1864) - 653

Rangoon and Western China—*continued.*

- 28-I. Survey Report of Captains Williams and Luard, dated 15th June 1867, and Journals, Maps, Sections, &c. attached thereto, respecting Rangoon and Western China :—Letter forwarding the Report to the Chief Commissioner, his Letter forwarding it to the Governor General of India, and the Governor General's Despatch transmitting it to the Secretary of State for India :—And, all Correspondence on the Subject, by Telegram or Letter, between the Governor General and Chief Commissioner subsequent to 30th June 1867 ; and between the Governor General and the Secretary of State for India subsequent to 15th August 1867 (in continuation of Paper, No. 421, of Session 1867) - - - - - 687
192. Replies to the several Memorials contained in the Return to the Address of the House, dated 12th August 1867, on the subject of Direct Commerce with the Shan States and West China from the Port of Rangoon :—And, further Memorials thereon subsequent to those contained in that Return, and Replies thereto (in continuation of Paper, No. 28-I., of Session 1867-8) - - - 747
367. Despatch of the late Governor General of India, Lord Elgin, relative to the proposed construction of a Commercial Way from Rangoon to Kianghung, with any Enclosures or Documents referred to in the said Despatch - - - - - 757

MAP OF INDIA

SHEWING THE LINES OF RAILWAY
IN THE YEAR 1868.



- I. East Indian Railway
- II. Eastern Bengal D^o
- III. Calcutta & South Eastern D^o
- IV. Madras D^o
- V. Great Indian Peninsula D^o
- VI. Bombay Baroda & Central India D^o
- VII. Scinde
- VIII. Punaub & Delhi Railway
- IX. Indus Steam Flotilla
- X. Great Southern of India Railway
- XI. Oude & Rohilkund Railway

Open Lines are colored Red.
Lines in course of construction D^o Black.
Lines upon which the Works not yet commenced are marked thus: ---
Indus Flotilla marked thus: --- ◆ ◆ ◆

REPORT

TO

THE SECRETARY OF STATE FOR INDIA IN COUNCIL

ON

RAILWAYS IN INDIA,

FOR THE YEAR

1867-68.

BY JULAND DANVERS, ESQ.,

GOVERNMENT DIRECTOR OF THE INDIAN RAILWAY COMPANIES.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

FOR HER MAJESTY'S STATIONERY OFFICE.

CONTENTS.

	Paragraph.	Page.
GENERAL PROGRESS - - - - -	1, 2	3
OUDE AND ROHILKUND RAILWAY - - - - -	3	3
LENGTH OF LINE COMPLETED BY EACH COMPANY - - - - -	4	3
FAILURE OF WORKS ON THE GREAT INDIAN PENINSULA RAILWAY - - - - -	5, 6	4
UNGUARANTEED LINES - - - - -	7	4
RAILWAYS AND THE COTTON DISTRICTS - - - - -	8, 9	4, 5
PROJECTS FOR RAILWAY EXTENSION - - - - -	10—13	5, 6
SUPPLIES FROM ENGLAND - - - - -	14—16	6, 7
SHIPPING OPERATIONS - - - - -	- - -	6, 7
LOCOMOTIVES AND ROLLING STOCK - - - - -	17, 18	7
NUMBER OF PROPRIETORS OF INDIAN RAILWAYS - - - - -	19	8
PERSONS EMPLOYED ON THE LINES - - - - -	20—24	8, 9
LEGISLATION - - - - -	25—27	10
ACCIDENTS - - - - -	28—30	10
CAPITAL EXPENDITURE, WITH TABLES RELATING TO PAST AND FUTURE OUTLAY	31—41	11—16
CAPITAL RAISED ON LOAN - - - - -	42, 43	16, 17
REVENUE - - - - -	44—47	18
TRAFFIC RESULTS - - - - -	48	18—21
MILEAGE RECEIPTS AND EXPENSES - - - - -	49—50	22
FUEL - - - - -	51	22
REVENUE AND CAPITAL - - - - -	52	23
RESERVE FUNDS - - - - -	52	24
WORKING EXPENSES - - - - -	53	24
TRANSIT DUTIES - - - - -	54	24
RATES AND FARES - - - - -	55—57	24, 25
GUARANTEED INTEREST - - - - -	58—61	25, 26
EAST INDIAN RAILWAY - - - - -	62—64	26
GREAT INDIAN PENINSULA RAILWAY - - - - -	65—68	27
MADRAS RAILWAY - - - - -	69, 70	27
BOMBAY AND BARODA RAILWAY - - - - -	71—73	27, 28
SCINDE - - - - -	74—79	28
INDUS FLOTILLA - - - - -	80—82	28
PUNJAB RAILWAY - - - - -	83—85	29
DELHI RAILWAY - - - - -	86, 87	29
EASTERN-BENGAL RAILWAY - - - - -	88—90	29
CALCUTTA AND SOUTH-EASTERN - - - - -	91	29, 30
GREAT SOUTHERN - - - - -	92—94	30
OUDE AND ROHILCUND - - - - -	95—98	30
SUMMARY - - - - -	99—103	31

REPORT.

To the Right Honourable Sir STAFFORD H. NORTHCOTE, Bart., M.P., Secretary of State for India.

SIR,

India Office, 1st May 1868.

I HAVE the honour to lay before you the following account of the progress and condition of Railways in India during the year 1867, as well as a statement of their financial position at the close of the official year which ended on the 31st March last.

2. Three hundred and forty-nine miles of new railway have been opened for traffic during the year, making the whole extent of line now open to be 3,943 miles. These 349 miles consisted of, 1st, the Jubbulpore branch of the East Indian line (225 miles in length), which was opened on the 1st June: 2dly, the extension by 29 miles of the Great Indian Peninsula Railway, opened on the 27th February to Nagpore, the terminus of the branch line which brings the cotton districts of Central India into connection with the port of Bombay: 3dly, the section of the Delhi line between Ghazeeabad and Meerut, 27 miles in length, which was opened on the 18th April, and another section of that line, of the same extent, lying between the western terminus at Umritsir and the river Beas, which was finished in November: 4thly, the completion on the 1st January of the remaining 41 miles of the Great Southern Railway to Errode, where it forms a junction with the Madras Railway.

3. I mentioned in my report last year that the guarantee had been conceded to the Indian Branch Railway Company for the construction of a system of railways in Oude and Rohilkund. The contract with this company was executed in August 1867, and by it the Secretary of State in Council agreed to guarantee interest at the rate of five per cent. per annum for 999 years, upon 4,000,000% or such further sum as, with the consent of the Secretary of State, may be raised for the purposes of the undertaking. The title of the company has been changed from the "Indian Branch" to the "Oudh and Rohilkund" Railway Company.

4. The following table shows the length of line now opened by each company, and the extent remaining to be finished.

Railway.	Total Length as at present sanctioned (given approximately).	Length opened during 1867.	Length opened since 1st January 1868.	Total Length now opened (1st May 1868).	Length remaining to be finished in			
					1868.	1869.	1870 and subsequently.	Total.
East Indian - { Main line - -	1,276 $\frac{1}{4}$	—	—	1,131 $\frac{1}{4}$	—	—	145	145
Jubbulpore line - -	225	225	—	225	—	—	—	—
Great Indian Peninsula - -	1,266 $\frac{3}{4}$	29	21	873 $\frac{1}{2}$	—	—	393 $\frac{1}{4}$	393 $\frac{1}{4}$
Madras - { S.-W. line, including Bangalore branch - -	492	—	—	492	—	—	—	—
N.-W. line - -	333	—	—	153	62	—	118	180
Bombay, Baroda, and Central India -	312 $\frac{1}{2}$	—	—	306	—	6 $\frac{1}{2}$	—	6 $\frac{1}{2}$
Scinde - - - - -	109	—	—	109	—	—	—	—
Punjab - - - - -	246	—	—	246	—	—	—	—
" Delhi - - - - -	320	54	—	54	—	185	81	266
Eastern Bengal - - - -	159	—	—	114	—	45	—	45
Great Southern - - - -	168	41	—	168	—	—	—	—
Calcutta and South-Eastern - -	29	—	—	29	—	—	—	—
Oudh and Rohilkund - - -	672	—	—	42	—	—	630	630
Total - - - - -	5,609	349	21	3,942 $\frac{3}{4}$	62	236 $\frac{1}{2}$	1,367 $\frac{1}{4}$	1,665 $\frac{3}{4}$

Failure of works
on the Great
Indian Peninsula
Railway.

5. While describing what is being done, it is necessary to refer to some works on which, instead of progression, there has unfortunately been retrogression. On the 19th July last, without any immediate apparent cause, the great viaduct on the Bhore Ghat incline of the Great Indian Peninsula Railway, consisting of eight arches of 50 feet span each, suddenly collapsed and in a few minutes became a heap of ruin. Happily, no loss of life or personal injury ensued. A careful examination, which was at once ordered, of similar structures, both on the open and unopen lines, showed that several of them were insecure, and Mr. Berkeley, the Company's consulting engineer, was immediately despatched to Bombay to devise means for putting the railway in a perfect state of repair without interfering with the traffic. With the exception of the place where the viaduct above mentioned fell, this will be accomplished; but considerable delay must occur in opening the line to Jubbulpore and consequently in completing the through communication between Bombay and Calcutta, which was to have taken place this year. This delay is the more to be regretted as the new weekly mail service between this country and India, which has recently come into operation, provided for the landing of all the mails at Bombay and for their transmission across the country to Calcutta.

6. These failures appear to be due, chiefly, to the faulty character of the masonry. To what extent this has resulted from an unwise economy, from imperfection of design, from the failure to secure the proper adaptation of the materials of the country to the purposes for which they were intended, or from lax superintendence, will be better known when the inquiries now in progress are completed. The lesson to be learnt from these disasters is that true economy in the laying out of important works of this kind consists in using such materials and adopting such principles of construction as will produce the strength and solidity suitable for the permanent performance by the railways of the services which they are intended to render; also that too much thought cannot be bestowed upon the preparation of plans, or too strict an inspection established while the works are in course of execution. This definition would not exclude railways of a lighter description in suitable places; but temporary buildings and makeshifts do not answer. We had an example of this during the cyclone last autumn in Calcutta. The permanent buildings on the Calcutta and South Eastern Railway resisted the force of the gale, and sustained no damage; while the wooden sheds were blown to pieces, and all the other temporary erections were levelled to the ground.

Unguaranteed
lines.

7. The only railway with which the Government have to do, apart from those undertakings which are under the guarantee system, is the tramway in the Madras Presidency, extending from Arconum to Conjeveram. And this can hardly now be said not to be guaranteed, inasmuch as it has been arranged that the Government shall make up the dividend of the company to three per cent. per annum upon their present paid up capital of 100,000*l.*, "until such time as it may be deemed desirable to proceed with the proposed extension of the line to Cuddalore, in which case such arrangements as may then appear suitable for the purpose will be made." The line is at present only 18 $\frac{3}{4}$ miles in length, but an extension is in contemplation which would, if executed cheaply, probably enhance the remunerative powers of the undertaking, and strengthen the line against the rivalry of country carts.

RAILWAYS AND THE COTTON DISTRICTS.

8. It will be seen, by reference to the sketch map affixed to this report, that almost all the principal cotton fields of India are connected by the railways with ports of shipment. The Great Indian Peninsula Railway brings to the port of Bombay the cotton of Candeish and Berar, and of Barsee and Sholapore.

The Bombay and Baroda Railway brings also to Bombay the produce of Guzerat:

The Madras Railway brings to Madras the cotton of Dharwar and Bellary by its northern line, and of Coimbatore and Salem by its southern:

The East Indian conveys to Calcutta the cotton grown in the valleys of the Ganges and Jumna:

The Punjab Railway, with the help of the Indus Flotilla and Scinde Railway, brings to Kurrachee the produce of the Punjab and North-west:

The cotton field of Tinnevely in Southern India, the port for which would be Tuticorin, is at present unprovided with a railway, but the extension of the Great Southern Railway into this district is in contemplation, and surveys are now being made to ascertain the best route. The cotton districts of Kattiawar, which are at present too far from the railway at Ahmedabad to be much accommodated by it, also require a short branch from that line to bring them into communication with Bombay.

9. Railways are beginning to tell upon the cotton cultivation of India in other ways than merely providing a more rapid and less costly mode of conveyance than formerly. Steam factories for cleaning cotton are springing up; machines for half pressing are established in many places, and in others steam presses for packing the bales for shipments have been constructed. An improvement, it is said, has also taken place in the mode of carrying on the trade in the interior, whereby the ryot is placed in a much better position than formerly.

PROJECTS FOR RAILWAY EXTENSION.

10. Various projects for the extension of railway communication in India have been brought forward; but while it is easy to propose new schemes, it is not so easy to provide the means for carrying them out. The objections to the guarantee system naturally induced the authorities to attempt other modes of encouraging and assisting railway enterprise, but none were successful, and it is now acknowledged that the security furnished by the Government guarantee and control is necessary to induce capitalists in England to provide money for Indian railways. Even with this advantage capital cannot be obtained in India for the purpose. The success of the chief lines of railway has relieved the revenues of a burden which, by many, it was expected would have been permanent. This success has led to the consideration whether a portion of the funds which find their way into the Government treasury from the earnings of the railways may not advantageously be applied to the extension of a system which is conferring such benefits upon the country. The Secretary of State in Council and the Government in India have both recorded their opinions that the time has arrived for doing so.

11. In a despatch to the Governor General, dated the 16th January last, a copy of which is given in the Appendix, the present is regarded as "a fitting time for taking a comprehensive view of our railway policy, past and future, for reviewing what has been already done, and for endeavouring to establish principles on which we may proceed henceforward;" and after alluding to the two classes in which future railways should be arranged, viz. commercial and political, and expressing an opinion that the guarantee system is upon the whole the one best adapted for the extension of the commercial, while direct Government agency might be preferable for the political, the Government is requested to take a general survey of the whole of India, and to state their opinion as to the lines which are most desired, as well as to the order, mode, and rate of progress in which they should be taken up. The Government in India has at the same time invited each of the local Governments "to consider what lines of railway they would regard as desirable to construct, should the necessary funds be available, either within their respective territories or to communicate with the most important points in the territories adjacent, whether British or Foreign;" the object of this reference being to ensure such a review of all possible lines as will "enable the Government of India and the Secretary of State to make a selection of those particular lines which are most needed, and which most commend themselves for early construction."

12. The following are the new projects which have already been brought under notice, viz.—

A continuation of the present line from Bombay, *via* Surat and Baroda, to Delhi and Agra; and a branch also to Kattiawar;

A line along the valley of the Indus to connect the present Scinde Railway at Kotree with the Punjab line at Mooltan;

A line from Lahore to the North-west frontier at Peshawur;

An extension of the Eastern Bengal Railway to Darjeeling on the one side, and Assam on the other;

The extension of the Madras Railway to connect its south-west line with Cochin as a western terminus.

The carrying out of the original design for the Great Southern Railway by extending it from Caroor or Trichinopoly through Madura or Tinnevely to Tuticorin;

A third line to connect the North-east and South-east lines of the Great Indian Peninsula Railway;

The construction of a bridge over the Hooghly at Calcutta, connecting [thereby the East Indian and the Eastern Bengal Railways.

There is also a project which, although distant from the continent of India, may possibly affect the well-being of our most eastern Indian provinces, and be the means of establishing important commercial relations with Western China. I allude to a scheme for railway communication between Rangoon and the western portion of China, which was some time ago brought forward by Captain R. Sprye, and was considered by Lord Cranborne, when Secretary of State, as a scheme worthy of investigation, "both in the interest of England and British Burmah."

13. Some of the lines above enumerated will pass through districts and provinces as rich and populous as those which are traversed by the main lines already executed. Others will not present the same commercial advantages, but it may be presumed, from the experience which has now been gained, that all will cost less than the existing lines. Past mistakes will not be repeated, and a great saving will be effected, by means of the open lines, in the transport of materials, which has hitherto formed a very heavy item in the capital account.

A Committee, which was appointed to consider matters connected with the Oude and Rohilkund Railway, has lately expressed the following opinion upon this subject:—"Without any sacrifice of necessary strength and permanence, such modifications could be introduced in the system of construction as should prevent the cost of railways in any case exceeding 10,000*l.* per mile of single line, and that under favourable circumstances most of the lines likely to be undertaken could be completed in an efficient manner at a far less cost."

SUPPLIES FROM THIS COUNTRY.

14. The work of construction has been assisted from this country, as usual, by the supply of materials for the permanent way and for stations, as well of locomotives and large quantities of miscellaneous stores. A considerable portion of these last, however, are provided for purposes of working and maintenance. The following statement exhibits the amount of shipments during the year. Freights have ranged high. At the commencement of the Abyssinian expedition they were excessively so, reaching in some cases to 60*s.* a ton.

SHIPPING OPERATIONS DURING THE YEAR 1867.

Railway Company.	Number of Ships employed in 1867.	Amount of Goods shipped in 1867.	Value of Goods shipped in 1867.	Amount paid for Freight and Insurance in 1867.
		Tons.	£	£
East Indian - - - - -	94	97,506	974,305	180,489
Great Indian Peninsula - - - - -	139	125,634	1,066,145	337,555
Madras - - - - -	79	53,826	400,632	109,345
Bombay, Baroda, and Central India - - - - -	40	13,402	206,972	39,692
Scinde - - - - -	101	1,149	29,470	5,506
Punjaub - - - - -		968	16,217	3,196
Indus Flotilla - - - - -		273	6,479	848
Delhi - - - - -		18,581	187,961	50,545
Eastern Bengal - - - - -	42	14,254	118,084	29,784
Great Southern of India - - - - -	10	7,504	43,700	17,349
Calcutta and South-Eastern - - - - -	6	228	4,287	445
Indian Branch - - - - -	1	4	400	15
Total - - - - -	512	333,329	3,052,652	774,769

15. The shipments which have been made from this country to India for the purposes of the railways since their commencement will be seen in the subjoined account:—

Shipments since commencement of railway works in India.

Year.	No. of Ships.	Ships lost.	Amount of Goods shipped.	Value of Goods shipped.
			Tons.	£
Up to end of 1860 - - -	2,605	39	2,094,686	10,431,976
In 1861 - - -	407	—	182,621	1,669,443
" 1862 - - -	280	1	138,013	1,487,582
" 1863 - - -	279	2	166,840	1,285,464
" 1864 - - -	233	—	102,318	1,018,164
" 1865 - - -	442	2	199,157	1,729,543
" 1866 - - -	581	7	312,227	2,527,757
" 1867 - - -	512	5	333,329	3,052,652
Total - - -	5,339	56	3,529,191	23,252,581

16. Five ships, it will be observed, laden with goods of the aggregate value of 12,300*l.*, were lost during the year. Two were chartered by the Great Indian Peninsula Railway, two by the Madras, and one by the Scinde. The goods were, in each case, fully insured.

17. The following table shows the number of locomotive engines, passenger carriages, and goods wagons added to the former stock of each company during the past year, and the number in use on the 1st January 1868. Locomotive power and rolling stock.

LOCOMOTIVE and ROLLING STOCK on the 1st January 1868.

Railway.	Miles open 1st May 1868.	Locomotives.			Passenger Carriages.		Trucks and Waggon.		Total Number of Vehicles on 31st December 1867.
		Former Number.	Added in 1867.	Total Number, 31st Dec. 1867.	Former Number.	Added in 1867.	Former Number.	Added in 1867.	
East Indian - - -	1,356	332	93	425	604	246	4,667	535	6,052
Great Indian Peninsula	873	167	42	209	609	349	3,611	969	5,538
Madras - - -	645	106	—	106	206	56	2,481	199	2,942
Bombay, Baroda, and Central India - -	306	63	2	65	179	2	2,824	50	3,055
Scinde - - -	109	25	—	25	66	—	731	7	804
Punjab - - -	246	38	—	38	116	—	669	—	785
Delhi - - -	54	—	6	6	—	107	—	254	361
Eastern Bengal - -	114	28	4	32	92	—	469	40	601
Great Southern of India	168	11	4	15	33	—	195	10	238
Calcutta and South-Eastern - - -	29	12	—	12	56	—	478	—	534
Oude and Rohilkund -	42	4	—	4	12	—	37	—	49
Total - - -	3,942	786	151	937	1,973	760	16,162	2,064	20,959

18. It will be observed that the proportion of locomotives to the mileage and to the rolling stock varies considerably on the different railways. For instance,—

The East Indian has a locomotive } 3.18 miles { and for every } 14 vehicles.
for every } locomotive }

Great Indian	"	4	"	"	26	"
Madras	"	6	"	"	28	"
Bombay and Baroda	"	4.70	"	"	46	"
Scinde	"	4.36	"	"	32	"
Punjab	"	6.65	"	"	20	"
Eastern Bengal	"	3.56	"	"	19	"
Great Southern	"	11	"	"	16	"
Calcutta and South Eastern	"	2.41	"	"	44	"
Oudh and Rohilkund	"	10.50	"	"	12	"

19. The following statement shows that the number of shareholders and debenture holders have increased from 43,824 on the 1st January 1867 to 49,690 on the 1st January 1868. During the same period the capital held by these respective numbers increased from 66,750,000*l.* to 74,400,000*l.*

Railway.	Number of Shareholders on 31st December 1867.						Number of Debenture Holders.	Total Number of Proprietors on the 31st Decem- ber 1867.
	Registered in England.			In India.				
	With Stock or Shares to the Amount of 1,000 <i>l.</i> and upwards.	With Stock or Shares of less Amount than 1,000 <i>l.</i>	Total in England.	Europeans.	Natives.	Total in India.		
East Indian - - -	5,300	6,894	12,194	197	114	311	3,766	16,271
Great Indian Peninsula -	4,040	5,691	9,731	68	108	176	1,770	11,677
Madras - - -	2,178	3,199	5,377	—	—	—	989	6,366
Bombay, Baroda, and Central India.	1,838	3,152	4,990	16	69	85	1,036	6,111
Scinde - - -	546	764	1,310	16	3	19	156	1,485
Punjab - - -	537	834	1,371	17	2	19	63	1,453
Delhi - - -	808	1,172	1,980	40	6	46	—	2,026
Indus Flotilla - -	81	207	288	—	—	—	120	408
Eastern Bengal - -	537	816	1,353	20	19	39	458	1,850
Great Southern of India	299	440	739	2	7	9	127	866
Calcutta and South- Eastern.	108	247	355	23	46	69	96	520
Oude and Rohilkund -	274	259	533	23	23	46	75	657
Total - - -	16,546	23,675	40,221	422	397	819	8,656	49,690

PERSONS EMPLOYED ON THE LINES.

European staffs.

20. The following table gives the number of persons employed on the railways specified on the 30th September 1867. The returns from the lines on the Bombay side have not yet been received.

Railways.	Agent's Department including Medical and Barrack Department.			Account Department.			Audit Department.			Printing and Stationery Department.			Stores Department.			Traffic Department including Steam Ferry.			Engineer's Department.			Carriage and Waggon Departments.			Locomotive Department.			Telegraph Department.			Grand Total.			No. of Miles open.	No. of Stations.
	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.					
East Indian Main Line, Jubbulpoor Branch.	38	153	191	22	399	421	33	345	378	8	289	297	60	1,465	1,525	572	4,451	5,023	171	7,501	7,672	173	5,582	5,755	763	2,730	3,493	79	1,074	1,153	1,919	23,989	25,908	1,247	127
Eastern Bengal	9	39	48	3	48	51	1	20	21	6	6	4	44	48	50	801	851	41	1,380	1,421	5	167	172	48	338	386	4	70	74	165	2,913	3,078	113	23	
Calcutta and South-Eastern.	4	10	14	—	23	23	—	—	—	—	—	—	9	9	6	80	86	4	212	216	—	—	—	15	71	22	1	12	13	30	353	383	28	8	
Oudh and Rohilkund.	4	1	5	1	23	24	1	26	27	3	3	—	19	19	5	143	148	—	—	—	1	2	3	8	36	44	2	22	24	22	275	297	42	5	
Punjab - -	13	32	45	20	28	48	—	—	1	55	56	8	8	16	50	457	507	22	79	101	—	—	—	66	190	256	30	46	76	210	895	1,105	246	20	
Delhi - -	—	—	—	4	3	7	—	—	—	—	—	—	3	6	9	10	75	85	28	190	218	—	—	—	11	10	21	7	7	14	63	291	354	27	3
Madras - -	14	28	42	2	83	85	10	82	92	—	—	—	14	104	118	129	1,285	1,414	59	2,735	2,794	—	—	—	317	1,908	2,225	37	132	169	582	6,357	6,939	645	66
Great Southern of India.	19	59	78	—	—	—	—	—	—	—	—	—	—	—	4	459	463	37	457	494	—	—	—	—	—	—	—	—	—	—	60	975	1,035	127	19
Total -	101	322	423	62	607	659	45	473	518	9	353	362	89	1,655	1,744	826	7,751	8,577	362	12,554	12,916	179	5,751	5,930	1,228	5,219	6,447	160	1,363	1,523	3,051	36,048	39,099	2,475	271

21. As the undertakings approach completion it becomes necessary to consider what establishment each company will have to maintain as a permanent staff. The Indian Railway service is yearly becoming more numerous and important, and the European portion of it is composed of a class of men which, until within the last ten years, has been in a very limited degree connected with any departments of our administration in that country. A civil engineer was seldom seen in India before railways were introduced, and the usual staff of a railway, from the traffic manager and locomotive superintendent to the engine driver and stoker, were of course unknown. Now it will be observed they are to be counted by thousands. They go out from this country generally between 25 and 30 years of age, and many spend the best years of their lives there. The mortality amongst them, notwithstanding the exposure to which they are subject, has been below the average. This may in some measure be due to the care which is taken in selecting healthy lives. For his own sake, as well as for the security of his employers, each man is thoroughly examined and passed by the Railway Company's physician before he is appointed.

22. During the past year several measures have been adopted by the Home authorities with the view of improving the position of the European servant. The pay is already high, being generally more than double what a man in the same class is receiving in England; but his expenses are also greater, and there were two disadvantages which a member of the mechanical class especially laboured under; he was very often separated from his wife and family through his inability to bear the expense of their passage; and he had no direct method offered him for making a provision for the future. Both these drawbacks will now be removed. The family man will be henceforth granted half the amount of the passage money for his wife and children; the other half being advanced to him, if he wishes, by the company, and repaid by monthly instalments. Provident funds have also been established by the two largest companies, viz., the East Indian and the Great Indian Peninsula, to which all their existing officers and servants may, and all appointed in future must, subscribe a proportion of their salaries, the Company undertaking to make liberal contributions from the excess profits which may be realized beyond a certain limit; in the case of these companies it is 6 per cent., but it does not follow that so high a limit should be applied to smaller or less remunerative concerns. Copies of the regulations of these funds will be found in the Appendix, and I trust they may be applied to other companies.

23. In my last report I stated that the East Indian Railway Company had established a savings bank for the use of their servants. At first there appears to have been a prejudice against it. The men, it was said, suspected that the evidence which it would give of their power to save would be used against them by reducing their pay. This feeling, however, soon wore off. The number of depositors increased from 133 in December 1866 to 345 in June 1867, the amounts deposited being 30,830*l.* and 78,749*l.* respectively.

24. The following table gives the casualties amongst the Europeans and East Indians on the railways during the half-year ended the 30th June 1867.

Railways.	General.		Traffic Department.		Locomotive and Carriage Department.		Engineer Department.		Electric Telegraph Department.		Store Department.		Total Casualties of all kinds.		Total Casualties by Deaths.		Average Number of Servants during the Half Year.		Length in Miles.	
	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Open.	Under construction.
East Indian - - -	5	3	65	34	189	91	35	8	1	10	—	3	295	149	23	10	1,624	644	1,131	368½
Great Indian Peninsula -	1	—	103	25	90	4	9	4	2	1	1	4	206	38	16	3	643	101	852	421½
Madras - - -	—	2	8	7	33	13	4	11	—	2	3	2	43	37	1	—	249	379	645	186
Bombay, Baroda, and Central India - - -	—	—	14	21	37	30	3	—	—	6	2	5	56	62	4	1	226	192	306	—
Sindh - - -	—	1	—	—	17	2	—	—	—	—	—	—	17	3	—	1	75	52	109	5
Indus Steam Flotilla - -	2	—	—	—	—	—	6	—	—	—	—	—	8	—	1	—	68	24	—	—
Punjab and Delhi - - -	—	—	5	—	12	—	5	—	—	—	—	—	23	—	1	—	201	33	273	270½
Eastern Bengal - - -	—	—	11	12	16	4	9	5	—	—	—	—	36	21	—	—	139	34	113½	38½
Calcutta and South-Eastern -	1	1	—	3	6	1	—	1	—	—	—	—	7	6	—	1	16	13	28	—
Great Southern of India -	—	4	—	2	3	1	—	—	—	—	—	—	3	7	—	1	39	47	127	39½
Grand Total - - -	9	11	200	104	403	146	71	29	3	19	6	14	698	323	46	17	3,285	1,524	3,584½	1,335½

LEGISLATION.

25. The Bill for the regulation of railways in India, which, when my last report was written, had been returned to the Government of India with the remarks and suggestions of Lord Cranborne and the various railway boards upon it, has again been sent to this country in a modified shape, and is a second time receiving the attention of the railway authorities in this country. Several modifications will be required.

26. In June last an Act was passed by the Indian Legislature "to render penal certain offences committed by servants of railway companies." It simply applied particular provisions of the Indian Penal Code relating to public servants to persons in the employment of the railway companies.

27. An Act will also be passed during the present session to enable the guaranteed Indian railway companies to raise money on debenture stock, instead of borrowing on debentures, upon such terms as the Secretary of State in Council may from time to time determine. This stock and the interest thereon will be a first charge upon the railways, and will, moreover, be guaranteed by the Secretary of State in Council. A copy of the Act is given in the Appendix.

ACCIDENTS.

28. During the past year there have been unfortunately several severe accidents. On the 26th June a terrible one occurred on the Great Indian Peninsula Railway at Numborah, 10 miles from Bhosawul and 288 miles from Bombay. An extraordinary flood had undermined an embankment, and made a fissure in it, shortly before a train came up. The engine passed over the gap, over which the rails had remained; but the train, consisting of one first, two second, and three third class carriages, went into the abyss. Eleven people were killed and twenty injured. The primary cause would appear to have been an insufficient provision for water way; but the accident itself might have been avoided if the obvious precaution had been taken of ascertaining whether the line was clear before the train started from the last station.

29. Another occurred on the same line on the 29th August, two or three miles from Lanowlie above the Bhore Ghât incline. It was caused by a runaway engine coming into collision with a passenger train. Mr. Howard, the late Director of Public Instruction, was killed on the spot. Several people were injured. The runaway engine had been carelessly left by the driver, while attending to some trifling matter close at hand.

30. An accident also occurred on the Bombay and Baroda Railway, which was happily unattended by injury to anybody. On the 1st February seven carriages of a train got off the rails, either in consequence of the road being out of order, or from a draw bar, which was found broken, having fallen down.

SUMMARY of ACCIDENTS during the Year 1867.

Railway Company.	Passen- gers Killed or Injured from Causes beyond their Control.		Passen- gers Killed or Injured from Mis- conduct or In- caution.		Railway Servants Killed or Injured from Causes beyond their Control.		Railway Servants Killed or Injured from their own Mis- conduct or In- caution.		Persons Killed or Injured at Level Crossings.		Tres- passers.		Miscel- laneous.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
East Indian. - - -	—	2	5	6	2	9	32	57	1	—	19	7	11	9
Great Indian Peninsula - -	12	22	—	1	6	13	28	24	—	1	18	6	12	13
Madras - - - -	—	—	—	—	—	1	2	—	—	—	1	—	—	—
Bombay and Baroda - -	—	1	1	1	8	8	6	7	1	—	1	—	3	—
Scinde - - - -	—	—	—	—	—	2	1	6	—	—	2	—	2	4
Punjab - - - -	—	—	—	—	1	—	3	—	—	—	—	—	—	—
Eastern Bengal - - -	—	—	—	—	—	—	3	—	—	—	1	—	—	—
Calcutta and South-eastern -	—	—	—	—	—	15	1	—	—	—	2	—	—	—
Great Southern - - -	—	—	—	—	1	—	2	—	—	—	2	—	—	—
Total - - -	12	25	6	8	18	48	78	94	2	1	46	13	28	26

CAPITAL.

31. Upwards of 9,000,000*l.* has been added to the capital accounts of the companies during the year, making the whole amount of capital which has been raised for railways in India on the 31st March to be 76,579,016*l.* Of this sum 60,048,871*l.* consists of shares or stock, and 16,530,145*l.* of debentures. Capital raised.

32. The total expenditure on the railways which have been opened, and on those which are now in course of construction, amounted on the 31st March to 75,071,656*l.* Capital expended

33. The expenditure during the past year was about 7,000,000*l.*, and of this upwards of 4,000,000*l.* was in England for permanent way, materials, locomotives, stores, &c. sent out from this country. This is the largest expenditure which has been incurred in any one year in England. Capital expended during 1867-68.

34. The estimated expenditure for the current year is 6,077,000*l.*, of which 1,971,000*l.* will be required in England and 4,106,000*l.* in India. Estimated expenditure for 1868-69.

35. The 75,000,000*l.* which has just been mentioned as the amount which has already been expended does not, however, represent the whole cost of the undertakings. It shows only what the railway companies have paid. In addition to that, Government has granted all the land, the value of which cannot be taken at less than 2,500,000*l.* Inasmuch, too, as the rate of exchange for converting the pound sterling, subscribed by the companies, into rupees is fixed by the contracts at 1*s.* 10*d.* the rupee, and the value of the rupee has, during the construction of the works, averaged about 2*s.*, the Government has contributed about 8 per cent. to the capital expended in India. This upon 45,000,000*l.* would amount to 3,600,000*l.* The actual cost of the railways is thus raised from 75 to 81 millions. But the amount upon which the profits are divisible is, fortunately for the companies, limited to their contribution.

36. The following table gives the expenditure by the railway companies in each year. As the expenditure applies to the works in progress, as well as to those which are finished, the mileage does not bear any relative proportion to the expenditure. This is particularly exemplified in the years 1859 and 1862. In the former 74 miles were opened, and 7,000,000*l.* were expended; in the latter 747 miles were opened, and 5,800,000*l.* only expended.

Year.	Miles opened during the Year.	Expended in England.	Expended in India.	Total.
		£	£	£
Up to 1850 -	—	130,375	44,781	175,156
In 1851 -	—	154,212	197,111	351,323
" 1852 -	—	174,920	252,640	427,560
" 1853 -	22½	252,484	418,165	670,649
" 1854 -	50½	960,878	768,710	1,729,588
" 1855 -	98½	1,939,101	1,431,904	3,371,005
" 1856 -	101½	1,752,813	1,765,094	3,517,907
" 1857 -	143	1,324,873	2,092,395	3,417,268
" 1858 -	145	1,940,052	3,551,073	5,491,125
" 1859 -	74½	2,507,949	4,654,923	7,162,872
" 1860 -	208	2,396,924	5,192,846	7,589,770
" 1861 -	759	1,596,010	4,962,604	6,558,614
" 1862 -	747	1,854,289	3,956,563	5,810,852
" 1863 -	233½	1,411,661	3,360,114	4,771,775
" 1864 -	402½	1,387,699	2,418,345	3,806,044
" 1865 -	388½	2,192,090	3,192,323	5,384,413
" 1866 -	205	3,942,598	3,816,957	7,759,555
" 1867 -	—	4,045,584	2,979,376	7,024,960

37. The following tables, which are furnished from the Accountant-General's Office, contain the particulars respecting the past and future expenditure of each company.

STATEMENT No. 1.

Showing the Amount of Capital estimated to be required for each Undertaking as now sanctioned, the Amount authorized to be raised, the Amount raised, and the Amount expended, to 31st March 1868.

Railway.	Amount of Capital estimated to be required.	Amount authorized by Government to be raised up to 31st March 1868.					Amount raised in England to 31st March 1868.				Amount raised in India to Date of last Advices.	Total raised to 31st March 1868.	Total Amount withdrawn for Expenditure to 31st March 1868 (partly estimated).
		Share Capital.	Debentures.		Total.	By Shares.	By Debentures.		Inconvertible.				
			Convertible into Shares.	Inconvertible.			Convertible.	Inconvertible.					
East Indian - { Main line - - { Jubbulpore line -	£ 27,500,000 3,600,000	£ 18,807,450 2,173,200	£ 2,192,550 1,026,800	£ 4,450,000 —	£ 25,450,000 3,200,000	£ 18,363,034 2,129,355	£ 2,161,450 1,026,800	£ 4,450,000 —	£ 299,214 7,665	£ 25,273,698 3,163,820	£ 25,952,533 2,409,864		
Great Indian Peninsula - -	22,000,000	15,000,000	—	4,000,000	19,000,000	13,930,533	—	3,926,950	390,697	18,248,180	17,614,586		
Madras - { Main line - - { Bellary line -	6,500,000 4,500,000	4,349,600 3,750,000	1,565,350 —	335,050 —	6,250,000 3,750,000	4,323,480 3,435,661	1,456,250 —	335,050 —	— —	6,114,780 3,435,661	6,340,890 2,445,072		
Scinde - - - -	2,250,000	1,919,200	180,800	150,000	2,250,000	1,744,999	180,800	150,000	21,695	2,097,494	2,111,073		
Indus Flotilla - - -	700,000	542,600	81,400	—	624,000	306,005	25,400	—	—	331,405	577,052		
Punjab - - - -	3,000,000	2,150,000	100,000	500,000	2,750,000	1,530,394	—	500,000	9,859	2,040,253	2,618,391		
Delhi - - - -	6,000,000	5,000,000	—	—	5,000,000	3,441,357	—	—	9,807	3,451,164	3,129,145		
Bombay, Baroda, and Central India	7,750,000	6,313,600	1,086,400	100,000	7,500,000	6,161,105	1,086,395	100,000	21,664	7,369,164	7,206,126		
Eastern Bengal - - -	2,800,000	2,000,000	—	662,000	2,662,000	1,894,385	—	610,700	14,413	2,519,498	2,336,286		
Calcutta and South-eastern -	616,000	328,500	271,500	—	600,000	308,877	112,850	—	19,623	441,350	615,242		
Great Southern - - -	1,700,000	1,074,500	175,500	100,000	1,350,000	1,073,279	175,500	100,000	1,221	1,350,000	1,354,077		
Oude and Rohilkund - - -	5,000,000	3,800,000	200,000	—	4,000,000	610,549	132,000	—	—	742,549	361,319		
Total - - - -	93,916,000	67,208,650	6,880,300	10,297,050	84,386,000	59,253,013	6,357,445	10,172,700	795,858	76,579,016	75,071,656		

Accountant General's Department,
9th April 1868.

W. G. GOODLIFE,
Accountant General.

STATEMENT No. 2.

Showing the Amount raised and expended by each Company during the year ended 31st March 1868.

Railway.	Sums standing to the Credit of the Companies on the 31st March 1867.	Sums advanced to the Companies on the 31st March 1867.	Amount raised between 1st April 1867 and 31st March 1868.		Amount expended			Total Raised during the Year ended 31st March 1868.	Total expended during the Year ended 31st March 1868 (partly estimated).
			By Shares or by converting Debentures into Stock.	By Debentures.	In England, between 1st April 1867 and 31st March 1868.	Date to which Accounts have been received.	In India. Amount.		
	£	£	£	£	£		£	£	£
East Indian - - -	134,050	—	1,030,518	996,770	1,164,310	31st Jan. 1868	771,907	2,027,288	2,086,217
Great Indian Peninsula - -	747,420	—	2,069,200	—	1,454,227	30th Nov. 1867	448,799	2,069,200	2,183,026
Madras - - -	194,889	—	1,189,415	—	391,586	31st Jan. 1868	178,239	1,189,415	619,825
Scinde - - -	—	16,077	97,844	—	49,634	30th Nov. 1867	35,712	97,844	95,346
Indus Floilla - - -	—	208,555	—	—	22,792	"	8,300	—	37,092
Punjab - - -	—	464,755	1,390	—	12,382	"	62,391	1,390	114,773
Delhi - - -	—	179,171	1,508,249	—	454,464	"	432,595	1,508,249	1,007,059
Bombay, Baroda, and Central India	—	400,844	952,135	—	246,912	"	71,341	952,135	388,253
Eastern Bengal - - -	—	19,749	529,459	200	177,879	31st Jan. 1868	133,819	529,659	326,698
Calcutta and South-Eastern -	—	149,549	—	—	3,038	"	18,305	—	24,343
Great Southern - - -	—	207,879	237,500	84,700	41,430	"	65,968	322,200	118,398
Oude and Rohilkund - - -	—	—	405,160	—	23,930	"	—	405,160	23,930
Total - - -	1,076,359	1,646,579	8,020,870	1,081,670	4,045,584	—	2,227,376	9,102,540	7,024,960
	Net Advance - £570,220								

Accountant General's Department,
9th April 1868.W. G. GOODLIFE,
Accountant General.

STATEMENT No. 3.

Estimated Expenditure for the Year 1868-69 on Capital and Revenue Account.

Railway.	Estimated Expenditure from 1st April 1868 to 31st March 1869.			Sum standing to the Credit or Debit of the Companies on the 1st April 1868 (partly estimated).	Sums to be raised by the Companies during 1868-69.	Total Amount now placed and to be placed in the Home Treasury of Government for 1868-69.	Estimated Balance on the 1st April 1869.
	In England.	In India.	Total.				
East Indian - - -	£ 400,000	£ 900,000	£ 1,300,000	£ 75,000	£ 1,325,000	£ 1,400,000	£ 100,000
Great Indian Peninsula - - -	700,000	1,100,000	1,800,000	634,000	1,366,000	2,000,000	200,000
Madras - - -	250,000	450,000	700,000	765,000	235,000	1,000,000	300,000
Bombay, Baroda, and Central India - - -	133,000	207,000	340,000	163,000	237,000	400,000	60,000
Scinde - - -	22,000	28,000	50,000	Deb. 14,000	65,000	65,000	1,000
Punjab - - -	18,000	92,000	110,000	Deb. 578,000	698,000	698,000	10,000
Delhi - - -	140,000	860,000	1,000,000	322,000	778,000	1,100,000	100,000
Indus Flotilla - - -	12,000	20,000	32,000	Deb. 246,000	280,000	280,000	2,000
Eastern Bengal - - -	46,000	174,000	220,000	184,000	136,000	320,000	100,000
Great Southern of India - - -	10,000	15,000	25,000	Deb. 4,000	35,000	35,000	6,000
Oude and Rohilkund - - -	240,000	260,000	500,000	381,000	419,000	800,000	300,000
Total - - -	1,971,000	4,106,000	6,077,000	Cr. 2,524,000 Deb. 842,000 Net Cr. 1,682,000	5,574,000	8,098,000	1,179,000

38. The subjoined statement shows how the expenditure has been divided amongst Capital the various works and departments of each Railway :—

Railway.	Works and Bridges.	Permanent Way and Stations.	Freight and Insurance.	Rolling Stock and Engines.	Establishments.	Miscellaneous, Electric Telegraph, Stores, &c.
	£	£	£	£	£	£
East Indian - - - -	8,775,000	6,485,000	2,785,000 And mis. stores.	3,145,000	3,380,000	3,352,000
Great Indian Peninsula - -	6,845,600	4,938,500	1,817,700 And certain stores.	1,888,000	1,156,200	196,000
Madras - - - -	2,446,900	2,999,800	1,061,000	798,000	717,200	362,700
Bombay, Baroda, and Central India -	2,896,500	1,735,400	586,800	1,096,800	433,800	470,000
Scinde - - - -	482,500	349,500	192,700	189,300	266,800	331,800
Punjab - - - -	215,500	691,700	444,200	312,300	371,700	420,400
Delhi - - - -	763,300	1,348,500	36,400	288,300	134,000	352,000
	Steamers, &c.	Warehouses, &c.				
Indus Flotilla - - - -	405,290	41,200	33,000	—	61,900	90,600
Eastern Bengal - - - -	1,476,600		Included under other heads	230,000	229,800	343,700
Calcutta and South-eastern - -	135,100	217,800	Do.	144,100	81,600	22,800
Great Southern - - - -						
Oudh and Rohilcund - - - -	67,200	89,700	43,900	55,000	27,300	87,900

39. Indian railways do not form an exception to the rule that expenditure always exceeds estimates. In some cases the cost has been three or four times greater than was expected. In others the excess has been very small. The latter is especially so with respect to the Madras lines, which certainly appear to set an example of economy both in construction and management. While so great a proportion of the system is incomplete, it is difficult to form an accurate estimate of the average mileage cost of the whole, but the actual cost of different open lines has of course varied extremely. The expenditure on the East Indian (including the losses occasioned by the Mutiny) will average about 22,000% per mile; some portions have cost upwards of 30,000%, but this includes double lines; some less than 15,000%. The expenditure on the Bombay and Baroda will average about the same until the extension to Delhi is completed; that on the Scinde will be about 20,000%. The Madras, on the other hand, has cost only about 12,000%, the Great Southern 10,000% a mile, and the line between Cawnpore and Lucknow under 7,000% a mile.

Capital expenditure.

40. The continued expenditure of capital on opened lines (all of which must have been approved by the Local Government), and the apparent tendency to go on in the same direction, is a matter for serious consideration.

41. The distance which separates the Boards in this country from those by whom such expenditure is initiated, throws a greater power and responsibility than usual on the executive officers. While they are devoting their skill and energy in carrying out the important work intrusted to them, it is an imperative duty to use their best endeavours to check and prevent waste and extravagance, and to enforce economical principles. These observations do not apply only to works in course of construction. When the lines are finished and open great vigilance will be required to keep down unnecessary expenditure both in capital and revenue accounts. The requisitions which are sent home for stores frequently appear to contain demands which are beyond the absolute necessities of the case; but there is naturally some hesitation on the part of the authorities in this country to decline to comply with them, being made, as they are, upon the recommendation of the railway agents, and with the approval of Government. Whether a more strict investigation should be made into departmental requirements I am unable to say, but it is a matter which demands the earnest attention of the officers of the Govern-

ment and of the railway companies. The Boards in this country have written very strongly on this subject of expenditure, and are most anxious to provide efficient checks against carelessness and extravagance. If a corresponding desire exists in India, economy will be ensured. In October last, when Mr. A. Meadows Rendel, the consulting engineer to the East India Railway Company, was about to proceed to India, the Directors wrote thus:—"The Board are alarmed at the demands for further capital expenditure which reach England with scarcely the exception of a mail. Putting aside the vague and so far unfounded estimate of anticipated traffic sent from India, they fear that the increase of revenue which may be reasonably expected from past experience is not sufficient to justify the large and continually increasing expenditure which is represented to be required; and they are determined to put a stop to it, until they are satisfied that the real necessities and interests of the Company demand it. You will therefore be expected to visit the whole of the works of the main and the Jubbulpore lines, in company with a deputation of the Agency, the locomotive superintendent, and the traffic manager, and to discuss with them at every principal station its condition in regard to works, and its actual and prospective requirements as regards traffic; and to consider, in regard to works in course of execution or in contemplation, whether they shall be proceeded with or stopped." Again, "The ruling principle which the Board prescribe for the government of yourself and every member of the conference is, that you shall all be guided by a sense of the necessity of confining all future expenditure of capital to the provision of such things, appliances, and buildings as may be, in your judgment, absolutely required for the conduct of a traffic increasing annually on the main line at the rate of 250,000*l.* per annum, and beginning on the Jubbulpore section at the rate of 25*l.* per mile per week, and increasing at the rate of 20 per cent. per annum to 40*l.* per mile per week."

CAPITAL RAISED ON LOAN.

Debentures.

42. The following statement shows the amount which has been issued by means of debentures. Last year it was 16,322,460*l.*, as compared with 16,458,545*l.* now.

43. The duty which is thrown upon the Government of paying off debentures when their term expires is liable to be attended with inconvenience. This and other considerations have led to the substitution of a permanent debenture stock, as a means of raising money upon more favourable terms than share capital, and of providing an investment for that class,—such as trustees, executors, and others,—which is not empowered to purchase ordinary stocks and shares. Parliamentary powers were necessary for this purpose, and, as already noticed, a Bill was introduced this Session, and has just passed. The Act provides for the issue by the Railway Companies, with the sanction of the Secretary of State in Council, of debenture stock (the interest and principal of which will be guaranteed by the Indian Government) to the extent of their existing borrowing powers. A copy of the Act will be found in the Appendix. It has been asked why, if money can be raised upon easier terms by means of a stock of this kind than by shares, this method is not resorted to altogether. The answer is, that the favourable rate upon which money can be thus raised is produced by the limit to the amount issued. There is more than one class of investors, and the object should be to divide the capital into such kinds of security as will meet the proportionate demands of each class.

State of Debenture Loans on the 31st March 1868.

Railway.	Amount.	Total Amounts.	Conditions.	Date at which Loan expires.
	£	£		
East Indian - - -	39,800		Convertible - -	5th April 1869.
" - - -	8,500		Ditto - - -	10th July 1869.
" - - -	396,640		Ditto - - -	5th Oct. 1869.
" - - -	190,000		Ditto - - -	20th Jan. 1870.
" - - -	1,026,800		Convertible and renewable	23d March 1870.
" - - -	1,500,000		Inconvertible - -	10th Aug. 1870.
" - - -	1,500,000		Ditto - - -	15th Dec. 1870.
" - - -	705,760		Convertible - -	1st April 1871.
" - - -	779,500		Ditto and renewable	9th Aug. 1871.
" - - -	50,000		Convertible - -	10th July 1872.
" - - -	1,000,000		Inconvertible - -	22nd Aug. 1872.
" - - -	440,000		Ditto - - -	19th March 1873.
" - - -	10,000	7,647,000	Ditto - - -	19th March 1875.
Madras - - -	1,791,300	1,791,300	Part convertible and inconvertible.	1869, 1870, 1871, and 1872.
Great Indian Peninsula - -	3,926,950	3,926,950	Part renewable and all inconvertible.	1869, 1870, 1871, 1872, and 1873.
Sind - - -	330,800	330,800	Part convertible and inconvertible.	Sept. 1868, and May and Sept. 1870.
Indus Flotilla - - -	25,400	25,400	Convertible - - -	1st May 1871.
Punjab - - -	500,000	500,000	Inconvertible - - -	July 1868 and July 1870.
Bombay, Baroda, and Central India	237,595		Convertible - - -	1872.
" " " -	100,000		Inconvertible - - -	1871.
" " " -	388,800		Convertible and renewable	1870 or 1875.
" " " -	492,400	1,218,795	Ditto - - -	1871 or 1876.
Eastern Bengal - - -	610,700	610,700	Inconvertible and part renewable.	1869 and 1871.
Oude and Rohilcund - -	132,000	132,000	Convertible and renewable	1870, 1871, & 1872.
Great Southern of India - -	175,500		Convertible - - -	1870, 1871, 1872, and 1874.
" " " - -	100,000	275,500	Inconvertible - - -	Jan. and July 1871.

REVENUE.

44. The revenue from the Railways for the years 1866-67 was only 32,337*l.* in excess of the previous year; but there was an increase of 962,984*l.* in that year's receipts over those of 1864-65; so that in two years the revenue has increased upwards of 1,000,000*l.*

45. Last year the net revenue amounted to 2,336,871*l.* and the sum paid for guaranteed interest on the whole capital, both for the open and unopen lines, was 3,179,095*l.* In the year before these respective sums were 2,304,534*l.* and 2,936,672*l.* The net amount advanced by Government for guaranteed interest, after deducting the half excess profits of the East Indian and the Great Indian Peninsula Railways, which did not go in reduction of the same, was accordingly 842,222*l.* in 1866-67, and 632,138*l.* in 1865-66. This is a retrograde step, which is to be regretted, but the result was produced by the depressed and almost stagnant state of trade during the latter period. The traffic at the present time is also still injuriously affected by the same cause, and I fear that a falling off continues. On some lines a certain relation may be traced between the traffic and the prices of the commodities usually conveyed by the railway. A falling off in the export and import trade will also generally be accompanied by a corresponding reduction in the traffic.

The total receipts for the year 1866-67 were 4,878,527*l.*, of which 1,378,779*l.* was obtained from passengers, and 3,499,748*l.* from goods. In the previous year the total receipts were 4,537,235*l.*; 1,278,580*l.* being from passengers, and 3,258,655*l.* from goods. The interesting diagrams of the traffic, prepared by General Baker, R.E., will be found in the Appendix.

47. The following table gives the receipts and expenses of each Company during the year ending the 30th June 1867.

Traffic.

RECEIPTS AND EXPENSES of the RAILWAYS for the year ending 30th June 1867.

Railway.	Receipts for Year ending 30th June 1867.				Expenses for Year ending 30th June 1867.			Net Receipts for the Year ending 30th June 1867.
	Pas- sengers, &c.	Goods and Minerals.	Tele- graph or Sundries.	Total.	Work- ing.	Main- tenance.	Total.	
	£	£	£	£	£	£	£	£
East Indian - - - -	557,511	1,488,290	111,333	2,157,134	782,897	201,544	984,441	1,172,693
Great Indian Peninsula - -	323,880	1,073,811	19,469	1,417,160	624,323	159,792	784,115	633,045
Madras : S.W. and N.W. Lines -	168,375	280,929	16,282	465,586	137,724	66,805	204,529	261,057
Bombay, Baroda, and Central India	186,546	225,113	22,066	433,725	233,311	76,336	309,647	124,078
Scinde - - - -	15,067	96,225	—	111,292	—	—	89,136	22,156
Punjab - - - -	34,869	56,977	—	91,846	—	—	71,314	20,532
Eastern Bengal - - -	61,666	71,608	7,083	140,357	54,111	14,247	68,358	71,999
Oude and Rohilkund* - -	2,540	120	—	2,660	1,160	—	1,160	1,500
Great Southern of India -	26,358	27,534	1,460	55,352	19,955	5,157	25,112	30,240
Total -	1,376,812	3,320,607	179,261	4,875,112	1,853,481	523,881	2,537,812	2,337,300

48. The following statements, which are compiled from information furnished by the Companies in India, contain full information regarding the traffic and working, and the train mileage receipts and expenses, may furnish useful data for future guidance, as by these the best judgment can be formed as to whether a line is worked economically or not. The number of passengers has increased from 12,867,000 in 1865-66 to 13,746,354 in 1866-67; and the gross receipts from passengers in the two years have been 1,278,580*l.* to 1,378,779*l.*, and from goods, 3,091,723*l.* and 3,320,487*l.* respectively.

* For nine weeks only, viz., from the 9th April.

STATEMENT of TRAFFIC RESULTS of the Year ending 30th June 1867.

Year ending 30th June 1867.	Length of Line Open.			Passenger Traffic.						Goods Traffic.										Number of Trains run.					No. of Miles travelled by Trains, exclusive of Shunting, &c.									
	Double.	Single.	Total.	Number of Passengers (exclusive of Holders of Season and Periodical Tickets).				Number of Holders of Season and Periodical Tickets.		Carriages.	Horses.	Dogs.	Live Stock.			Minerals.			General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	Mineral Trains.	Mixed Trains.	Total.	By Passenger Trains.	By Goods and Mineral Trains.	By Mixed Trains.	By Mineral Trains.	Total.					
				1st Class.	2d Class.	3d Class, including Parliamentary.	Total Passengers.	Cattle.	Sheep.				Pigs.	Coal and Coke.	Other Minerals.	Total.																		
East Indian	94½	106½	1,181	34,119	111,860	4,280,628½	4,426,611½	1,018½	1,324	3,975	6,024	894	653	41	285,351	—	286,351	582,140	7,382	18,666	—	7,506	—	—	—	—	—	1,669,859	3,518,165	60,243	—	—	5,238,898	
Great Indian Peninsula	98	754	853	39,688	207,761	2,830,164	3,070,613	1,266	654	4,077	4,575	387	207,624	17	67,368	559,790	627,168	419,607	15,889	24,612	—	—	—	—	—	—	—	—	1,103,859	1,495,918	—	—	29,885	2,620,665
Madras	—	645	645	8,919	70,375	1,833,752	1,912,146	—	1,034	3,519	2,843	—	4,538	—	—	—	—	—	—	—	—	10,214	10,214	—	—	—	—	—	—	—	—	1,361,794	1,361,794	
Bombay, Baroda, and Central India	11½	294½	306	7,102	40,216	1,505,444	1,552,762	33	301	1,659	1,331	5,953	211,573	40	20,223	9,692	38,915	160,453	682	2,254	1,128	4,979	1,128	—	—	—	—	188,713	250,010	286,893	10,357	756,973	218,760	
Scinde	5	104	109	2,097	5,540	135,589	143,235	3,707	69	291	688	8	174	14	9,403	—	9,403	191,958	74	890	—	1,062	—	—	—	—	—	2,235	87,863	128,662	—	—	362,488	
Punjab	—	246	246	6,312½	25,383½	585,113	616,809	—	36	1,946	1,141	11	156	10	—	—	—	64,028½	1,594½	267½	2,801½	2,801½	—	—	—	—	80,918	91,532	190,638	—	—	338,424½		
Eastern Bengal	—	110	110	39,827½	47,967½	1,102,504½	1,190,299½	211	160	654	1,071	65	701	—	22,566	5,419	28,015	106,559	3,825	1,470	—	676	—	—	—	—	171,764	109,729½	56,931	—	—	338,424½		
Great Southern of India	—	127	127	2,133	—	437,027	439,160	—	172	244	267	142	268	9	—	—	—	70,383	—	—	—	—	—	—	—	—	—	—	—	—	103,124	—	—	
Calcutta and South-eastern	—	28½	28½	3,653	16,215	339,277½	359,145½	—	4	10	53	20	48	11	90	85	175	9,588	—	2	1,152	1,152	—	—	—	—	—	—	56	61,588	—	61,644		
Oude and Rohilkund	—	42	42	301½	813½	34,469½	35,584½	—	—	—	—	—	—	—	—	—	—	246	—	—	276	276	—	—	—	—	—	—	—	11,592	—	11,592		

STATEMENT OF TRAFFIC RESULTS—continued.

Year ending 30th June 1887.	Number of Engines employed in the foregoing Columns.	Average Fares per Mile.				Receipts (Gross) from Passenger Traffic.										Receipts (Gross) from Goods Traffic.										Total Receipts from all Sources of Traffic.	Average Receipts per Train Mile.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Ordinary.		Express.		Receipts from Passengers.						Receipts from Mails.				Total Receipts from Passenger Traffic.		Live Stock.		Minerals.				General Merchandise.				Total Receipts from Goods Traffic.		Receipts per Train Mile from Goods.		Miscellaneous Receipts.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		1st Class.	2d Class.	3d Class, Parliamentary.	1st Class.	2d Class.	3d Class, including Parliamentary.	Holders of Season and Periodical Tickets.	Total from Passengers.	Total Receipts from Excess Horses, Dogs, &c., conveyed in Passenger Trains.	Receipts from Mails.	Total Receipts from Passenger Traffic.	Receipts per Train Mile	£	s.	£	s.	£	s.	£	s.	£	s.	£	s.			£	s.	£	s.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
East Indian	544	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Year ending 30th June 1907.		Maintenance of Locomotives and Rolling Stock and Works.		Cost of producing Locomotive Power by Wages and Materials.		Repairs and Renewals of Carriages and Waggon.		Traffic Charges.				Rates and Taxes.		Compensation for Personal Injury, &c.		Compensation for Damages and Loss of Goods.		Legal and Parliamentary Expenses.		Miscellaneous Working Expenses included in the foregoing.		Total working Expenditure.	
		Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Coaching.	Merchandise.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.	Gross.	Per Train Mile.
East Indian	-	£ s. d. 200,543 8 50	d. 15 25	£ s. d. 347,323 15 25	d. 15 25	£ 95,129	d. 4	£ 108,042	d. 7 25	£ —	d. —	£ 1,869	d. 14	£ 958	d. —	£ 24,383	d. 1 12	£ 283	d. —	£ 147,819	d. 6 34	£ 936,453	d. 3 51
Great Indian Peninsula	-	159,792	14 52	337,163	30 72	64,390	5 8	41,982	3 8	119,563	11	—	—	4	—	724	66	3,105	28	57,890	5 24	734,115	5 06
" (North-west line)	-	4,750	5 2	11,472	12 7	1,470	1 6	1,777	2	3,749	4 1	19	—	—	—	27	—	1	—	1,976	2 2	25,241	2 31
Madras (South-west line)	-	62,058	13	63,615	13	8,377	1 8	11,806	2 50	19,190	4	362	—	—	—	1,053	3	52	—	13,772	2 0	179,238	3 08
Bombay, Baroda, and Central India	-	76,337	21 71	97,242	27 66	45,484	12 92	18,123	5 15	28,131	8 00	266	08	—	—	4,694	1 33	6	—	39,415	11 21	399,648	7 34
Scinde	-	17,616	20	38,073	43	3,961	4 80	5,355	4 80	10,709	12	244	—	—	—	223	—	137	—	12,218	15	89,136	8
Punjab	-	12,900 15 8	8 25	25,885 8 2	16 50	1,730	12 87	14,423	9 76	455	51	—	—	—	—	426	26	—	—	15,453	9 75	71,314	4 12
Eastern Bengal	-	14,246	10 02	20,989	14 84	2,913	2 12	7,914	5 02	5,713	4	513	38	—	—	351	19	249	13	15,379	11	68,272	4
Great Southern of India	-	5,157	5 75	11,865	12 80	3,456	3 75	—	—	3,630	4	—	—	—	—	—	—	—	—	975	63	25,113	2 25
Calcutta and South-eastern	-	2,754	10 723	4,468	17 39	5 8	032	3,019	11 736	—	—	133	432	—	—	219	86 238	3 9	928	1,337	5 208	12,401	4 282
Onde and Rohilkund	-	—	—	485	9 01	12	28	291	—	—	6 038	—	—	—	—	—	—	—	—	420	8 71	1,160	2 002

49. The Table which follows gives separately, for the sake of comparison, the mileage receipts and expenses of each Company, also the average mileage results of the Railways in the United Kingdom, and the same information with respect to the Grand Trunk of Canada Railway. The data contained in this Statement furnishes the best means of forming a judgment of the value of each undertaking, as well as to whether it is worked economically or not.

TRAIN MILEAGE RECEIPTS and EXPENSES, 1866-67.

Company.	RECEIPTS.	EXPENSES.											
	Average from all Sources.	Maintenance.	Locomotive.	Rolling Stock.	Passenger Traffic.	Goods Traffic.	Rates and Taxes.	Personal Compensation.	Compensation for Damage.	Legal Expenses.	Miscellaneous.	On account of all Departments.	
	s.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	s.	
East Indian - - -	8'26	8'50	15'25	4'	7'25	—	½	—	1'12	—	6'34	3'51	
Great Indian Peninsula -	10'77	4'52	30'72	5'6	3'8	11	—	—	'06	'28	5'24	5'96	
Madras - - - -	6'10	12'90	12'80	1'8	3'25	4	—	—	'30	—	2'9	3'08	
Bombay, Baroda, and Central India - - - -	10'95	21'71	27'66	12'92	5'15	8	'08	—	1'33	—	11'21	7'34	
Scinde - - - - -	10'	20'	48'	4'80	4'80	12	—	—	—	—	15'	8'70	
Punjab - - - - -	—	8'25	16'50	12'87	9'76	'51	—	—	'26	—	9'75	4'12	
Eastern Bengal - - -	8'33	10'62	14'84	2'12	5'62	4'	'38	—	'19	'13	11'	4'	
Great Southern - - -	5'8	6'	12'6	3'50	—	4'	—	—	—	—	'62	2'26	
Calcutta and South-eastern -	2'85	10'72	17'39	'93	11'75	—	'48	—	'85	'92	5'20	4'28	
Oude and Rohilkund -	4'57	—	9'01	'26	6'04	—	—	—	—	—	8'71	2'	
Great Britain (1865) - -	5'12	5'50	8'	2'75	8'50	—	2'25	2'50	—	—	—	2'47	
*Grand Trunk of Canada (1866)	5'66	11'50	14'	4'	13'	1'50	1'50	—	—	—	4'	4'	

* From the Report of Captain Tyler, R.E.

50. A marked difference will be observed between the expenses in the locomotive departments of the Bengal and the Bombay lines, showing the great importance of the fuel question. On the Madras lines the difference is not so great, although they are as dependent upon England for coal as the lines in Western India. This is partly due to the more general use of wood, but partly also to an economical system of management, which reflects credit on the Railway authorities in the Madras presidency. With regard to wood fuel, measures have been taken by the Government for planting and preserving forests for the purpose. With respect to coal, an abundant supply is obtained in Bengal; but the beds in Central India have not yet been made available for railway purposes, access to them having been delayed by the tardy operations on the Great Indian Peninsula railway. A short branch to the mines will be required when the trunk line to Jubbulpore is completed; and it is to be regretted that arrangements have not already been made for carrying out this work, so that the coal may be ready by the time it is wanted. Other places in the neighbourhood of the Great Indian Peninsula Railway, where coal is known to exist, have been explored, but the result of the exploration has not yet transpired.

51. The following Table shows the amount of fuel which has been sent from this country during the year. A patent fuel, it will be observed, has been tried, and hitherto the reports have been favourable as to its suitability for locomotive purposes. The cost of coal at Bombay was very much enhanced by the great demand for it, as well as for shipping, at the commencement of the Abyssinian expedition. Australian coal has been supplied at Bombay at rupees 25 or 50s. a ton. No report has yet been received of its quality.

FUEL Exported from England.

Railway.	Coal, Coke, and Patent Fuel sent out during 1867.	Cost in England.	Freight, &c.	Average Cost per Ton on Delivery in India.
East Indian - -	Coke - Tons. 1,665	£ 3,886		s. 46
	" - 980	£ 3,579		73
Great Indian Peninsula - -	Coal - 49,354	£ 27,418	£ 98,708	51
	Coke - 18,329	21,855	34,882	62
	Patent fuel 11,361	8,031	22,763	54
Madras - -	Coal - 3,778	2,075	8,131	54
	Coke - 8,142	6,319	17,825	59
	Patent fuel 5,351	3,903	11,825	59
Scinde - -	Coal - 5,348	2,850	11,335	54
Great Southern - -	Coal - 2,847	—	—	57
	Coke - 440	—	—	76
Bombay and Baroda -	No coal was sent out by this Company during the year, a plentiful supply having been provided the year before. The Company has a contract for 10,000 tons of Australian coal, but no ship had arrived at the close of 1867.			

52. One great advantage of the guarantee system is that it provides effectual means for keeping the capital and revenue accounts perfectly distinct. Every sixpence which is advanced by the Government for interest on the capital, both before and after the lines are opened, is charged against revenue. An account is kept of the sums so advanced, and the Government is reimbursed, under the terms of the contracts, out of the profits of the Railways. Rules have, moreover, been laid down for the guidance of those who have to make up and examine the half yearly revenue accounts. True and real profits are carefully defined, and it is shown how they are to be ascertained. The confusion between capital and revenue accounts which has prevailed so much among railways in this country, and which has led to the undue increase of capital, and to the conferring upon the undertakings a deceptive value, is thus rendered impossible. Under these rules* all the proper and legitimate outgoings and charges of a half-year, whether applicable to the working or maintenance of the line, have to be determined and paid, or, if not actually paid, the amount due is set aside out of the receipts before the sum applicable to dividend is arrived at. Some companies have gone even beyond this, and have, to my mind, wisely established reserve funds for maintenance purposes. The expenses attending the repairs and revenues of a railway are thus more equally and therefore more justly distributed. Objections are, however, taken to this practice by some, on the score that all repairs and restorations are made as they are required, and that the continuous attention to the requirements of a line is sufficient to ensure the proper annual outlay; but it must be borne in mind that there is a gradual deterioration going on which is not always visible at the time. Rails are always *wearing* out, but they are not *worn* out until they have performed certain work. The time must come when a general replacement will be necessary, the expense of which would

Revenue and Capital.

Reserve funds for renewals, &c.

* The following are the rules in question,—

The Government Consulting Engineers shall satisfy themselves, with reference to each Railway with which they are connected, that the way and the works and rolling stock, the maintenance of which is chargeable to revenue, are efficiently maintained, and are in good repair at the end of each half-year; or, if that be not the case, that in making up the half-yearly revenue account adequate funds have been reserved for their repair or restoration. They shall add a certificate to the half-yearly revenue account in the one of the two subjoined forms which may be applicable to the case.

Form I. "Certified that the way and works and rolling work were efficiently maintained during the half-year, and that they were at the end of the half-year in good repair."

Form II. "Certified that adequate funds have been reserved in this Revenue Account for bringing the way and works and rolling stock into a state of good repair."

Reserve funds.

fall very heavily and unjustly upon the revenue of the two, three, or even four years in which it took place. It is also argued that, as there is a certain ratio between the amount of traffic on a line and the wear and tear, the charge is and ought to be higher, and can be better met, when the traffic is large. By referring to English lines experience shows that this position is not borne out. The profits of a railway are there found to be much greater in proportion to its traffic in the earlier years of its existence than afterwards. In a recent report upon Railways in the United Kingdom, it was remarked that the "permanent way was beginning to need general replacement." No fund having been provided to meet the expense which this implies, it will have to be borne by the revenues of one, two, or more years. And what will be the profits when the receipts are subject to this charge? Taking all these matters into consideration, I submit that it is right, so far as may be practicable, to lay aside yearly or half yearly such a sum as would provide a fund equal to the ascertained average cost of maintaining and repairing a line for a certain number of years, taking out of the fund the actual charges as they occur. And if the principle be correct, it applies with peculiar force to Indian railways, which are subject to the influences of a tropical climate, with its occasionally violent floods and hurricanes. The plan had been attempted and abandoned in the case of English railways, because there was no sufficient security against the employment of the fund for other purposes than that for which it was designed. But with Indian Railways it is different, as they possess a machinery by which such a fund will be preserved inviolate for application to its intended objects.

Working expenses.

53. One question connected with the subject of traffic has been under consideration this year, viz., the proportion of the dead weight of the vehicles to their carrying power. It has been found, upon examination, that the carrying power of some of the existing trucks and wagons may be increased at small cost, either by strengthening the wheels, by increasing the length or by raising the sides in case of light goods. Passenger carriages may also be made to accommodate larger numbers by lengthening the vehicle, and thus providing the means of making additional compartments.

Transit duties.

54. I alluded in my last Report to the inconvenience which was caused to certain traffic on the Great Indian Peninsula Railway by the mode of collecting the salt and sugar duties at the frontier of the Bombay Presidency and the Central Provinces. In April last you expressed to the Government your hope that means would be devised whereby the collection of the frontier duties would be secured with only a minimum of interference with railway traffic. That hope has been realized. The duty is now paid at all the railway stations where the salt bags are put on the railway, so that trains are not now delayed and examined at the frontier.

RATES AND FARES.

55. The new system under which the Railway Companies were allowed to regulate the fares, under a maximum fixed by Government has come into operation this year. It is likely, I think, to work advantageously to all concerned. If, on the one hand, it is argued that the tendency of the Railway Companies is to adopt high rates, it may, on the other, be contended that the Government is disposed to fix rates unduly low;* the one being at the expense of the travelling public, the other at the risk of success to the railways. But the fact is, the interests both of the Government and of the Companies are the same.

56. From motives of self-interest, the Companies will find it expedient to make such arrangements as will increase the taste for travelling amongst all classes, especially the lowest, and will encourage the use of the railway for the conveyance of merchandise. The Directors are, I know, anxious on other accounts that fares should be moderate, conveyances safe and comfortable, travelling punctual and convenient. More than this Government cannot desire. The object both of Government and the Companies thus being the same, it is desirable to fix the responsibility of accomplishing it somewhere. Those who are specially engaged to manage the railway are surely, under the arrangement made, the best fitted to take that responsibility.

* As an example of the effect of reducing fares too low, it may be mentioned that recently it was thought desirable to lower the rates for goods on the Bombay, Baroda, and Central India Railways, in order to draw traffic from the sea. The result has been a great diminution of profits.

57. It may be observed with regard to the interest of the Government in this Rates and fares. matter, that there is a difference between the position and responsibilities of the Government in India, and the Government or Legislature in this country. In both countries the authorities are bound to see that the full advantages of the railway are secured to the public upon reasonable terms, and in both countries they are bound to take care that the Companies have powers to protect themselves as well as their passengers and customers. The difference consists in the Government of India being, under the guarantee system, directly interested in the pecuniary success of the railways. While, therefore, the Indian Executive may require such regulations to be observed, and such charges to be made, as will secure to the people the proper enjoyment of the railway, they are also equally concerned with the Companies in pursuing a system of management which should make their lines remunerative, and have the effect of relieving the State from the payment of the current guaranteed interest, and of liquidating the debt for advances of past years. Railways confer general advantages upon a country, but they likewise confer special advantages upon a particular class; and it is only right, therefore, to endeavour to relieve the country at large from the burden of the guarantee before the travelling and trading portion of the community are benefited at the expense of the whole. It will, however, be found generally that the amount of profit is the test of usefulness, and that the higher the receipts the more sure you may be that the fares are suitable.

GUARANTEED INTEREST.

58. It will be seen by the subjoined statement that the amounts for which the Government was last year responsible on account of Guaranteed Interest was 3,237,937*l.* Of this sum, however, about 2,500,000*l.* was paid by the Companies themselves, so that the advances by Government really only amounted to little more than 700,000*l.* In the previous year the net amount so advanced was 800,000*l.*, and for the year before that 1,450,000*l.*

59. The whole sum which has been paid by Government for Guaranteed Interest since the commencement of the guarantee system now amounts to 22,212,505*l.*, of which about 9,500,000*l.* has been recovered from the Railway Companies, leaving about 12,000,000*l.* as their present debt, which is chargeable against the half surplus profits over 5 per cent. This sum represents the amount which the Government has actually paid. Spread over eighteen years it gives an average annual charge upon the Revenues of India of 666,666*l.*

60. In the year 1850 the amount paid was 23,790*l.* In 1855 it was 297,039*l.* In 1860 it had reached 1,422,492*l.*, but was reduced to a net payment of about 1,000,000*l.* by the earnings of the Railways. In 1865 2,796,676*l.* was paid, and about 1,800,000*l.* received back in reduction thereof.

Statement of the Total Amount of Guaranteed Interest advanced to each of the under-mentioned Indian Railway Companies to 31st December 1867.

Company.	Interest paid up to 31st December 1866.				Interest paid during 1867.												Total Amount paid up to the end of 1867.			
					England.				India.				Total.							
	£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
East Indian - - -	8,622,036	12	9		1,277,210	10	4	12,417	18	5	1,289,628	8	9	9,911,665	1	6				
Great Indian Peninsula	4,149,575	11	10		744,046	14	3	19,234	4	1	763,280	18	4	4,912,856	10	2				
Madras - - -	2,575,022	2	8		403,988	15	1	—			403,988	15	1	2,979,010	17	9				
Scinde - - -	632,119	14	5		98,147	15	0	*542	7	6	98,690	2	6	730,809	16	11				
Punjab - - -	518,116	10	11		98,955	10	11	*239	0	3	99,194	11	2	617,311	2	1				
Delhi - - -	195,033	12	1		80,033	10	10	*197	10	0	80,231	0	10	275,264	12	11				
Indus Steam Flotilla -	117,751	14	7		16,570	5	0	—			16,570	5	0	134,321	19	7				
Bombay, Baroda, and Central India - -	1,341,378	3	0		305,880	5	10	1,083	4	4	306,963	10	2	1,648,341	13	2				
Eastern Bengal - -	441,926	1	11		93,982	19	4	506	9	6	94,489	8	10	536,415	10	9				
Calcutta and South- Eastern - - -	120,505	9	11		22,333	0	0	567	0	3	22,900	0	3	143,405	10	2				
Great Southern of India	218,160	7	1		48,955	17	2	—			48,955	17	2	267,116	4	3				
Oude and Rohilkund -	42,941	13	1		13,045	0	3	—			13,045	0	3	55,986	13	4				
Total - - -	£18,974,567	14	3		3,203,150	4	0	34,787	14	4	3,237,937	18	4	22,212,505	12	7				

NOTE :—The sums marked * are the interest for one half-year only, the accounts of the second half-year's payment not having been received from India.

Accountant General's Department,
26th March 1868.

W. G. GOODLIFFE,
Accountant General.

61. The following statement will show approximately what each Company has received, and paid back, on account of Guaranteed Interest.

Company.	Total Amount of Guaranteed Interest paid by the Government to the 31st December 1867.	Amount of Net Revenue and Surplus Profit paid to Government to 31st December 1867.	Amount due to Government, and chargeable against half Surplus Profits over 5 per cent.
	£	£	£
East Indian - - - -	9,911,665	4,820,450	5,091,215
Great Indian Peninsula - - -	4,912,869	2,291,948	2,620,921
Madras - - - -	2,979,011	1,086,979	1,892,032
Bombay, Baroda, and Central India -	1,648,342	519,279	1,129,063
Scinde - - - -	730,810		
Punjab - - - -	617,311		
Delhi - - - -	275,264		
Indus Flotilla - - - -	134,322		
Eastern Bengal - - - -	536,416	251,962	284,454
Great Southern - - - -	267,116	99,955	167,161
Oudh and Rohilkund - - - -	55,987	1,506	4,481

EAST INDIAN.

62. The principal event connected with this Company's operations during the year has been the completion and opening in August of the line from Allahabad to Jubbulpore, a distance of 225 miles. This addition makes the system of open railway now in this Company's hands 1,356 miles in length. As before observed, the main advantage of the Allahabad and Jubbulpore line is in abeyance while the other portion of the line to Bombay is unfinished, but a certain amount of local traffic is carried on, and has been gradually increasing, and arrangements have been made for conveying passengers by coach between Jubbulpore and Nagpore, whereby the journey between Calcutta and Bombay can be made in five days.

63. The only portion of the East Indian Railway, irrespective of the doubling of certain sections of the open line, which now remains to be finished is the Chord line, and this, it is expected, will be completed next year, but the progress in the execution of the work has not been so satisfactory as it should have been. While these are going on, the expenditure on capital account must necessarily continue. But the disposition to increase works, which was manifested in the demands sent to this country from India, and in the continued excess of expenditure over estimates, seemed to require some extra check. The Directors accordingly determined to institute a searching investigation into the matter, and deputed their Consulting Engineer, Mr. A. M. Rendel, to proceed to India, personally to inspect the works, and to confer with the agent and other officers of the Company on the spot, with the view of placing a limit to the demand for capital, and of checking the tendency to increased expenditure. Mr. Rendel's mission has been attended with success, and has had the effect of reducing some of the demands and estimates which had been made.

64. The traffic during the year has been greatly checked by the commercial state of the country. The Company were, however, enabled, for a second time, to declare a higher dividend than the five per cent. guaranteed for the half year ending the 30th June. The revenue accounts for the half year ending the 31st December last have not yet been received, so that I am unable to show the comparative earnings of the last two years.

GREAT INDIAN PENINSULA.

65. The most prominent event connected with the history of this undertaking during the year has been the unfortunate failure of some of the principal bridges on the open and unopen lines, whereby traffic has been interrupted, and delay produced in the completion of the railway to Jubbulpore. Mr. G. Berkley, the Consulting Engineer to the Company, proceeded to India in November last, to examine, in conjunction with the Government officers and railway engineers in the spot, all the works

on the line, with the view of adopting such measures as would remedy, in as complete and prompt a manner as possible, the defects which might appear. These operations will necessarily involve large expenditure, and will postpone for some time the opening of miles of railway which it was expected would have been, ere this, yielding returns; but it is most essential that no doubts should exist with respect to the safety and permanence of the line, and the necessary alterations will be undertaken with vigour and promptitude. Notwithstanding these lamentable drawbacks, the railway has a grand future before it. When brought into perfect condition, it will be a magnificent work, and it does not require much foresight to see that the traffic will be immense, and, properly managed, remunerative.

66. Upon the Company agreeing to apply all the profits which were earned during the half year ending 31 June 1867 towards the repair of the defective works, the Government allowed all further outlay on account thereof to be charged to capital.

67. The length of the Company's system now open is 852 miles, leaving 421 miles to be finished. The opening of the line to Nagpore in February 1867, by the completion of the section between Sindee and that place, was an important event, as bringing the railway into the heart of the cotton district of Central India. Passengers and mails are now taken by this route to Calcutta, coach conveyances being provided between Nagpore and Jubbulpore.

68. The revenue of the year ending 31st December 1867 was as follows, as compared with that of the previous year :—

		Receipts.	Expenses.	Net.
		£	£	£
1866	-	1,252,962	716,628	536,334
1867	-	1,486,712	828,006	658,706

MADRAS RAILWAY.

69. No increase has been made to the open length of this Company's lines during the past year. The works in progress in the north-west line have not proceeded so rapidly as was expected, but they are now being carried on with more energy. There is less cause for regret in the delay, as the works on the Great Indian Peninsula Railway have been so retarded that they will not probably be finished by the time the Madras line is ready to be opened to Raichore, the point of junction. The through communication between Bombay and Madras will not, I apprehend, be completed before the year 1871.

70. The traffic gradually but steadily improves. The state of trade has had a depressing effect here as elsewhere; but, notwithstanding this, the receipts bear a favourable comparison with those of the previous year, and the expenses of maintenance and working exhibit results which bear evidence of the good and economical management which has generally distinguished this Company. They were as follows :—

SOUTH-WEST LINE.

		Receipts.	Expenses.	Net.
		£	£	£
1866	- - -	376,539	180,304	196,235
1867	- - -	382,463	171,609	210,854

NORTH-WEST LINE.

		Receipts.	Expenses.	Net.
		£	£	£
1866	- - -	61,714	20,199	41,515
1867	- - -	88,529	31,645	56,883

BOMBAY AND BARODA RAILWAY.

71. The only operations at present coming under the category of construction works in this Company's railway are those on the island of Bombay, and those connected with the bridge over the Sabarmuttee river at the other end of the line. Both these have advanced during the year, but suggestions have been made with respect

to the goods terminus at Bombay which have caused the question as to its future permanent site to be reopened. It rests between Colaba and Moodee Bay. The works in the neighbourhood of the Nerbudda river were again damaged this year by heavy floods. The embankments and one or two small bridges only suffered, the large bridge over the river sustaining no injury. The traffic was interrupted for a few weeks. It is satisfactory to report that the result of an examination of the iron piles of the various bridges showed that no corrosion had occurred, and that, in the opinion of the officers who examined them, no injury need be apprehended, through the action of the water upon the iron, for many years to come.

72. The traffic has been much depressed by the commercial state of the Presidency, and by the successful competition of the sea boats. The low price of cotton has induced the merchants and planters in Guzerat to adopt the cheapest rather than the quickest mode of conveyance. The distance of the line from these cotton districts will make the sea competition formidable, especially when prices are low.

73. The traffic for the last two years was as follows :—

	Receipts.	Expenses.	Net.
	£	£	£
1866 - - -	407,688	293,234	114,454
1867 - - -	425,050	282,899	142,151

SCINDE.

74. All the bridges and culverts which were washed away by the extraordinary floods of 1866 have been thoroughly repaired or reconstructed, and the line has been placed in a sound condition.

75. The traffic has improved, notwithstanding the continued depression of trade, and the expenses of working have been rather less, but there is still room for economy in some of the departments.

76. The short length of this line, and its high cost, tend to contract its paying powers. It should be looked upon as a part of a line of communication (and sooner or later that line will be a railway) between Kurrachee, the Punjab, and the North-Western Provinces. In this light it becomes the terminus, as it were, to a large system, and its capital cost is spread over the whole.

77. It is satisfactory that the reports lately received of the effects of the works undertaken for the improvement of the harbour of Kurrachee have been more favourable, and that those works which had been suspended will now be resumed.

78. I regret to say that the arbitration in the case of Bray v. the Scinde Company, the protracted and expensive proceedings of which have caused so much disappointment and dissatisfaction, still continues. The action was commenced by the contractors nearly eight years ago, and expenses to the amount of 27,000*l.* have already been incurred by the Company alone.

79. The traffic during the last two years was as follows :—

	Receipts.	Expenses.	Net revenue.
	£	£	£
1866 - - -	100,348	83,268	17,080
1867 - - -	117,947	97,689	20,258

INDUS FLOTILLA.

80. The four new steamers which were sent out from this country to augment the flotilla have been put together and connected. They are pronounced to be fine, well-constructed vessels, and are expected to work better than those previously on the line. A few modifications in the details of one or two of them were, however, required, and these are now been carried out under the directions of Captain Wood, the agent and Superintendent.

81. The floating dock for Kotree has been finished and sent out, but has not yet been erected.

82. The flotilla now consists of 16 steamers, inclusive of the three tugs and 27 barges.

PUNJAB.

83. The length of this line has been reduced from 253 to 246 miles, in consequence of an alteration in the route of the branch from Moultan to the river Indus. The alteration was rendered necessary by the cutting away of the river bank. The traffic develops very slowly, and the expenses at present bear a high proportion to the receipts.

84. The isolated or disconnected position of the line operates against its present success. The traffic now for the most part is of a local character, for the inconvenience and delay which occur in the conveyance of merchandise, caused by the necessity of twice breaking bulk in the course of the journey to Kurrachee, tend greatly to diminish its usefulness as a means of transport to the port of Kurrachee. On the eastern side a remedy will soon be applied by its junction at Umritsir with the Delhi Railway, now in course of construction, and partly open, which will bring upon it considerable traffic from the fertile districts south of the Sutlej.

85. The results of the traffic during the past two years were—

		Receipts.	Expenses.	Net Revenue.
		£	£	£
1866	- -	94,079	70,640	23,457
1867	- -	94,865	not received.	

DELHI.

86. Fifty-four miles out of the 320 which constitute the railway bearing the above title have been opened during the past year; one section of 28 miles at the Delhi end, between Meerut and Ghazeeabad, where the junction is formed with the East Indian Railway; and one of 26 miles at the Umritsir extremity, extending from that place to the river Beas.

87. The works on the remaining portion of the line are, upon the whole, proceeding satisfactorily, and some of the bridges are advancing towards completion. It is expected that the section between Meerut and Umballa, about 120 miles in length, will be opened early next year. The traffic has been very limited, and on the Meerut and Delhi section was for a short time interrupted by damage done to the works by the severe floods of last season.

EASTERN BENGAL.

88. The construction of the extension line to Goalundo is being prosecuted with vigour, and, with the exception of the bridge over the Gooraie river, the works are expected to be finished in the course of next year. Arrangements will probably be made for establishing a temporary ferry at the site of the bridge, so as to enable the traffic to Goalundo to commence as soon as the railway is ready. The floods in September last were very violent, and caused considerable damage to some of the open portions of the line, but the traffic was not stopped, although interrupted for a few weeks.

89. The traffic has improved, notwithstanding the state of trade; and a considerable increase to the goods traffic may be expected when the extension is open.

90. The results of the last two years are as follows :—

		Receipts.	Expenses.	Net Revenue.
		£	£	£
1866	- -	141,025	77,851	63,174
1867	- -	156,917	79,072	77,844

CALCUTTA AND SOUTH-EASTERN.

91. This undertaking has been transferred from the Company to the Government. The continued deficits in the revenue, although small, imperilled the dividend of the shareholders. In the hope and expectation that the results of the traffic would become better, the Secretary of State did not for some years allow the

deficits to be made up by deductions from the amount paid for guaranteed interest ; but the Government of India at length recommended that the Company should be relieved from the management. The failure was not attributable to any proceedings of the Railway Company ; but it was expected that economy might be secured by amalgamating the line with some other undertaking. It is clear, however, that its success depends upon the policy which may be pursued with regard to the formation of the new port and town of Canning. The capital was returned to the shareholders on the 1st April without any deduction whatsoever, with interest up to that date.

GREAT SOUTHERN.

92. The extension of this line to Erode, where it forms a junction with the Madras Railway, was completed and opened for traffic on the 1st January past. Its total length, which now extends from Negapatam to Erode, is $166\frac{1}{2}$ miles, and it has been constructed for the same moderate cost as the first portion, viz., about 10,000*l.* per mile. Surveys are being made, with the view to its further extension in a southerly direction to the port of Taticorin.

93. The traffic is at present moderate, but it may be expected to improve, now that the junction has been formed with the Madras Railway.

94. In 1866 the receipts amounted to 45,582*l.*, and the expenses to 20,888*l.*, leaving a net profit of 24,694*l.* Last year (1867) the receipts were 58,191*l.*, and the expenses 27,682*l.*, the net revenue being 30,509*l.*

OUDE AND ROHILCUND.

95. The principal proceedings relating to this undertaking which have taken place during the year have consisted of preliminary investigations. In August the contract between the Company and the Government was executed. Immediately after, Major-General Beadle, late R.E., was appointed Agent to the Company in India; and all the necessary measures were taken for ascertaining the best route, and for arranging the order in which the various sections of the railway should be undertaken, and the manner in which they should be executed. The system embraces a length of 672 miles, consisting of 430 miles of main line through Oudh and Rohilcund, extending from Buxar to Mooradabad, with branches to Cawnpore 81 miles, to Benares 76 miles, to Fyzabad 14, and to Nynee Tal 71 miles. An inquiry has also been made into the proposed system of permanent way, and into the engines and rolling stock, by a committee appointed by Government for the purpose. A light description of railway, and a peculiar kind of locomotive, had been adopted by this Company; and it was desirable to ascertain whether they could be advantageously applied to the important system which they had undertaken to construct, or whether they could be improved. The committee consisted of Col. R. Strachey, R.E., Mr. Power, Chief Engineer of the East Indian Railway, Mr. Prestage, Agent and formerly Chief Engineer to the Eastern Bengal Railway, Colonel Hutchinson, R.E., and Major Hovenden, R.E.

96. With regard to the order in which the construction of the different sections should proceed, the Committee recommend that operations should commence on the eastern portion of the system, viz., between Benares, Fyzabad, and Lucknow, a length of 250 miles, postponing for the present the branch to Buxar.

97. The continuation of the existing line from Lucknow as far as Byram Ghat is to be executed upon the same system of permanent way, but the Committee hesitate about recommending the general adoption of the system, considering that the present experience is too short to admit of a positive conclusion on the subject.

98. It will be recollected that a branch to the Nynee Tal iron works is included in this Company's system. Everybody agrees that arrangements should be made for reopening these works on a scale commensurate with the demand for iron in this part of India, which must inevitably increase year by year. It is proposed to commence the construction of the line from Nynee Tal, and to employ the iron manufactured at the works. This would accomplish the twofold object of making a cheap line and of giving a fair start to an industry which it is most important to develope.

SUMMARY.

99. The following is a brief summary of the foregoing information :—

The length of open line has been increased during the year to 3,943 miles by the completion of 349 miles. There are 1,665 miles now in course of construction, and various proposals for extending the railway system are under consideration. Materials to the amount of 333,329 tons have been sent out from this country, at a cost of 3,827,420*l.* The whole expenditure in this country during the year was about 4,000,000*l.* In India it was about 3,000,000*l.* The locomotive stock has been increased by 151 engines to 786 in all. The passenger carriages, which on the 1st May 1867 amounted to 1,973, now number 2,733; and 2,043 trucks and waggons have been added to the former stock of 16,162. The proprietors of Indian stock and debentures have increased from 43,824 to 49,690.

100. Upwards of 9,000,000*l.* has been added to the capital of the railways, making the whole amount that has been raised up to the 31st March last 76,579,000*l.*, of which 75,071,600 has been expended.

101. The gross receipts for the year ending the 30th June 1867, were 4,875,112*l.*, as compared with 4,537,235*l.* of the previous year. The working expenses were 2,537,812*l.* and 2,225,495*l.* respectively. The net receipts in 1867 were 2,337,300*l.*, and 2,304,534*l.* in 1866. In 1867 the number of passengers was 13,746,354, of whom 13,074,980 were 3rd class. In 1866 the total number was 12,867,000. The sum paid by passengers last year for fares was 1,376,812*l.*, as against 1,278,580*l.* of the previous year; and the amount received for the conveyance of goods was 3,320,607*l.*, as against 3,091,723*l.* The train miles run were 10,980,319 and 10,120,920 respectively.

102. These results would have been more satisfactory if the trade of the country had not received so severe a check as at times almost to produce stagnation. Comparisons are more striking when taken back a few years. A better idea of the progress which has been going on may be formed by bringing the present in juxtaposition with ten years ago. Then it took about four weeks to travel by dāk, and as many months to convey a regiment from Calcutta to Simla; now it occupies five or six days. Then about 300 miles of railway were open throughout all India, and about 2,000,000 of people travelled on them; now there are nearly 4,000 miles, traversed by 13,746,300. The capital expended ten years ago amounted to about 20,000,000*l.*; now it amounts to upwards of 75,000,000*l.*

103. During 1857-58 the net revenue derived from the railways was 111,446*l.*; last year it was 2,336,871*l.* But what is more remarkable, although the capital had increased from twenty to seventy-five millions, and the guaranteed interest in proportion, the net amount paid by the Government for guaranteed interest in the two years 1857-1867 was about the same, viz. 700,000*l.* What will be the condition of these undertakings ten years hence it is not within my province to predict, but while the material improvements which these facts indicate are going on, and while the country is being, as it were, garrisoned from north to south and from east to west, a great social change is taking place which cannot but have a most beneficial effect upon the people at large.

I have the honour to be,

Sir,

Your most obedient, humble Servant,
JULAND DANVERS.

* The following, an extract from a letter from a native, Mr. A. Sashiah, deputy collector, Tanjore, is an example.

"Social relationships have vastly multiplied and are daily multiplying. Parents who would not think of marrying their children in distant places have no scruple to do so, the railway having in fact annihilated the distance. Such connexions render frequent travelling necessary, and the railway is ever ready at their service."

APPENDIX.

Railway,
No. 3.

India Office,
London, 16th January 1868.

To His Excellency The Right Honourable The GOVERNOR GENERAL OF INDIA in Council.

SIR,

Para. 1. Numerous communications have within the last twelvemonth been received from your Excellency's Government, and also from the Governments of Madras and Bombay, in which are discussed the merits of several projects for railway extension in different parts of India. Among them I may refer particularly to the Despatches noted in the margin,* relative to proposed lines of railway towards or parallel to the North-West frontier,—through Rajpootana,—from the existing Bengal railways to Darjeeling or Assam,—from Hooblee to Carwar, and to new branches in connexion with the Madras or Great Southern of India Railways.

* From Government of India :—
 No. 111, dated 22d December 1866.
 " 16, " 6th February 1867.
 " 38, " 3rd April 1867.
 " 45, " 16th " "
 " 94, " 18th September 1867.
 From Government of Madras :—
 No. 1, dated 9th February 1867.
 " 4, " 13th " "
 " 6, " 22d May 1867.
 From Government of Bombay :—
 No. 7, dated 27th April 1867.

2. Each of these schemes has, in consequence, engaged my attention in Council, but the fact of so many projects being brought forward simultaneously seems to show that the present is a fitting time for taking a comprehensive view of our railway policy, past and future, for reviewing what has been already done, and for endeavouring to establish principles on which we may proceed henceforward.

3. Past results may be briefly summed up, and the present responsibilities of Government briefly described, as follows. Nine guaranteed Railway Companies have opened for traffic 3,600 miles, and are engaged in the construction of about 2,000 more. The amount of capital which these Companies have been empowered to raise may be stated, in round numbers, at 83 millions, and the amount actually raised at 74 millions. The aggregate amount (inclusive of what has been already raised) required for the completion of their undertakings, either as single lines or without other doublings than those already sanctioned, may be estimated at 90 millions, which sum must, however, be raised to 100 millions at least, if additional doublings, which will certainly be required at no distant period, be taken into account. The annual net expenditure of the State in advances of guaranteed interest was, when at its highest in 1863–64, 1,669,283*l*. It has since been reduced by payments into the Government Treasury of net railway earnings, and, last year, was little more than 700,000*l*. In all probability, the increase of net earnings might prevent Government advances on account of guaranteed interest from rising above the last-mentioned sum, if no additional capital were to be guaranteed beyond what may be necessary for the completion of undertakings already sanctioned. The present debt of the several Railways to Government on this account is about twelve millions.

4. In proceeding, however, to inquire into the expediency of further extensions, one fact to be noticed is that, as the most important lines have already been selected, results as favourable as those which are in course of realization from some of these can scarcely be expected from lines hereafter to be made.

5. Nevertheless, though equal profits may not be attainable from future lines, this does not constitute an unanswerable objection to further extension. For lines which in themselves are perhaps unremunerative may be of the highest political and social, and, indirectly, even of great commercial value. Thus a line which connects important strategical points may produce an economy of military expenditure far more than sufficient to cover any loss which may arise upon the working of the line itself. Again, a line which facilitates the carriage of food in districts where harvests are uncertain may be of the highest value, though not directly remunerative. The same may be said of lines which facilitate the intercourse of remote and backward districts with the more advanced, or which enable the people to come more easily and frequently to markets, to courts of justice, and so forth, or enable magistrates to visit their districts with greater convenience. These are only a few of the many indirect advantages attending the extension of railways, which justify us in laying down the principle that direct commercial success is not to be regarded as the one single test of their value.

6. These considerations, however, strengthen the conclusion to which practical experience leads us, that railways are not likely to be made in India without the aid of Government. The capital which has hitherto been invested in them has almost entirely come from England. It has gone to make, probably, the most profitable lines; and if even for these it could not be obtained without a guarantee, it is unreasonable to suppose that it would be forthcoming without similar support for the less profitable. The motives which might possibly induce intelligent and public spirited natives to promote the construction of unremunerative lines, for the sake of improving

the general condition of the country, would have no weight with English capitalists. But such motives are precisely those which ought most to influence a Government having a due regard to the general welfare of its subjects.

7. In order, however, that Government may be prepared to take upon itself the pecuniary risks of railway extension, it becomes us to take a general survey of the whole of India, for the purpose of deciding upon the lines which are most to be desired, and of considering in what order, in what mode, and at what rate of speed they should be taken up.

8. These several points, among others connected with the general question, have accordingly been under my consideration in Council, and I propose now to place you in possession of the views which I have in consequence been led to form, and in maturing which I am desirous of having the additional assistance of your Excellency's Government.

9. It seems desirable that projects for future railways should be arranged in two separate classes, as commercial or political. It may often be difficult to distinguish clearly between the two, but this need not be attempted. It will be sufficient that some should be recognized as being recommended chiefly by commercial, and others chiefly by political, utility.

10. Of the political lines, the most important are undoubtedly those to the north-west frontier, upon which I propose to address you in a separate despatch.

11. Of the commercial lines, those should, in my opinion, be preferred which will open up the districts whose natural resources are at once largest and least developed, and which are least aided by existing lines. Competing lines ought not to be promoted, but care should be taken to scrutinize the grounds upon which any line is said to be in competition in another. As regards feeders, it is to be hoped that the several Companies will not refuse to undertake such as both they and the Government may concur in regarding as desirable. The question of doubling existing lines may properly be left to the Companies.

12. In the choice of new lines of either description, I am desirous that due weight should be given to the claims of the different presidencies. The funds which are to support them will be drawn from the whole country, and it is desirable that the whole country should participate in the benefit derived from them. In some districts, however, improved roads would answer sufficiently all the purposes of a railway, and it is needless to say that when this is the case the former should be preferred.

13. We have next to consider the best means of raising the requisite funds for the construction of such future railways as may be decided upon.

14. You have recently come to the conclusion that the guarantee system should, so far as regards irrigation works, be superseded by a system of direct Government agency. The reasons for this decision, however, are not applicable to the case of railways, as the question of possible interference with the land revenue does not here arise. At the same time, there are other considerations which ought not to be lost sight of. The main objection to guarantees in connexion with railways is that they tend to weaken the ordinary motives to efficient management and superintendence; and recent disclosures as to the state of the works on the Great Indian Peninsula line afford new proof that there is much room for apprehension on this score. I am, therefore, anxious to know whether any or what additional precautions can, in your opinion, advisably be taken to secure good workmanship under the guarantee system, which, in spite of its obvious defects in certain particulars, I am disposed to regard as, upon the whole, the one best adapted for the extension of one class of railways, viz., the commercial.

15. For the political class, I am inclined to think that direct Government agency might be preferable. It must be borne in mind that the guarantee system is not a system admitting of indefinite extension. The number of persons who are willing to invest in guaranteed railways is necessarily limited, and the market may easily be glutted with this description of securities, if they be too freely offered. The guarantee system seems to me to be properly applicable only when there is a reasonable hope that the profits of the undertaking will in a moderate time rise above the amount which the guarantee covers. If a line is to be made for Government purposes, at the risk of probable commercial loss, it will be best that the Government itself should make it, and should not weigh down the market for railway securities by the introduction of a stock which is never likely to rise to a premium.

16. With respect next to the rate of progress of future extensions, I will confine myself to observing, that as the construction of railways resolves itself into a question of charging the revenues and the credit of India it must be considered with reference to the general financial position of the Government, and the extent of its actual or contemplated expenditure on public works. It would be inconvenient and inappropriate to name a particular capital sum as the limit of what should be invested in railway enterprise; but it might be possible to ascertain a sum which should be taken as the limit of the annual charge which should be borne on railway account, and thus to establish a system under which, in proportion as the revenues of India were relieved of the charge of old lines by their becoming self-supporting, new ones might be taken up in their place. I would leave to your Government to propose what the exact limit in question should be.

17. With respect to the order in which different lines should be taken up, I may again distinguish between political and commercial. With regard to the former, I shall state my

views in the separate despatch to which I have already alluded. With regard to the latter, I would request you, after passing in review the several applications and projects which have from time to time been brought before you, to favour me with your estimate of their comparative urgency.

I have the honour to be,

Sir,

Your most obedient, humble Servant,

(Signed) STAFFORD H. NORTHCOTE.

AN ACT to enable certain guaranteed INDIAN RAILWAY COMPANIES to raise Money on DEBENTURE STOCK.

Preamble.

WHEREAS the Railway Companies severally known as the Great Indian Peninsula Railway Company, the East Indian Railway Company, the Madras Railway Company, the Bombay, Baroda, and Central India Railway Company, the Scinde Railway Company, the Eastern Bengal Railway Company, and the Oude and Rohilcund Railway Company, Limited, were constituted and incorporated by Acts of Parliament, or by Certificate under Act of Parliament, for the purpose of constructing, maintaining, and working Railways in India; and the said Companies have, under powers vested in them by their Acts, or otherwise vested in them, entered into terminable Contracts and Arrangements with the East India Company, or with the Secretary of State in Council of India, with respect to their Undertakings, and they have in exercise of such Powers, with the Sanction of the East India Company, or the Secretary of State in Council of India, raised Capital by the Issue of Shares or Stock, and have borrowed Money for their Undertakings on the Security of Mortgages or Bonds:

And whereas it is expedient that each of the said Companies should be empowered to create, with the Sanction of the Secretary of State in Council of India, Debenture Stock in lieu of Borrowing or in Substitution for, or for the Discharge of, Mortgages or Bonds:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, as follows:

Power to each Company to create and issue Debenture Stock, with the Sanction of the Secretary of State in Council of India.

1. That each of the said Companies may from Time to Time, with the Sanction of the Secretary of State in Council of India, and of Three Fifths of the Votes of its Shareholders and Stockholders entitled to vote in that Behalf at Meetings of the Company, present in Person or by Proxy at any Extraordinary Meeting convened with Notice of this Purpose, raise all or any Part of the Money which for the Time being the Company has raised or is authorized to raise on Mortgage or Bond, by the Creation and Issue at such Times, in such Amounts and Manner, on such Terms, at such Price, subject to such Conditions, and with such Rights and Privileges as the Secretary of State in Council of India shall think fit, of Stock to be called Debenture Stock, instead of and to the same Amount as the whole or any Part of the Money which may for the Time being be owing by the Company on Mortgage or Bond, or which the Company may from Time to Time have Power to raise on Mortgage or Bond, and may with such Sanction of its Shareholders and Stockholders aforesaid attach to the Stock so created such fixed and perpetual, irredeemable, redeemable, variable or other Interest at such Rate, payable half-yearly or otherwise, and commencing at once or at any future Time or Times, when and as the Debenture Stock shall be issued or otherwise, as the Secretary of State in Council of India shall think fit.

That all the following Provisions shall apply to every Case of raising Money by Debenture Stock, Debenture Stock to be a prior Charge.

2. All the Provisions following shall apply to every Case of One of the said Companies exercising the Power herein-before given for raising Money by the Creation and issue of Debenture Stock; (that is to say),

Interest on Debenture Stock to be a primary Charge.

1. The Debenture Stock, with the Interest thereon, shall be a Charge upon the Undertaking of the Company prior to all other Stock or Shares of the Company, and shall be transmissible and transferable in the same Manner and according to the same Regulations and Provisions as other Stock of the Company, and shall in all other respects have the Incidents of Personal Estate.

Debenture Stock to be registered.

2. The Interest on Debenture Stock shall have priority of Payment over all Dividends or Interest on any other Stock or Shares of the Company, and shall rank next to the Interest payable on the Mortgages or Bonds for the Time being of the Company legally granted before the Creation of such Stock, but the Holders of Debenture Stock shall not as among themselves be entitled to any Preference or Priority.

Company to declare Certificate to Holders of Debenture Stock.

3. The Company shall cause Entries of the Debenture Stock from Time to Time created to be made in a Register to be kept for that Purpose, wherein they shall enter the Names and Addresses of the several Persons and Corporations from Time to Time entitled to the Debenture Stock, with the respective Amounts of the Stock to which they are respectively entitled, and any Instalments by which the Price or Subscription for any Debenture Stock may be made payable shall be recoverable as Calls are recoverable under "The Companies Clauses Consolidation Act, 1845."

4. The Company shall deliver to every Holder of Debenture Stock a Certificate stating the Amount of Debenture held by him, and all Regulations or Provisions for the Time being applicable to Certificates of Shares in the Capital of the Company shall apply mutatis mutandis to Certificates of Debenture Stock.

5. Nothing herein contained shall in any way affect any Mortgage or Bond at any Time legally granted by the Company before the Creation of such Stock, or any Power of the Company to raise Money on Mortgage or Bond so far as such Power is not by this Act expressly extinguished; but the Holders of all such Mortgages and Bonds shall, during the Continuance thereof, respectively be entitled to the same Priorities, Rights, and Privileges in all respects as they would have been entitled to if this Act had not been passed. Mortgagees not to be affected by this Act.
6. The Debenture Stock shall not entitle the Holders thereof to be present or vote at any Meeting of the Company, or confer any Qualification with reference to the Government thereof, but shall in all respects, not otherwise by this Act provided for, be considered as entitling the Holders to the Rights and Powers of Mortgagees of the Undertaking other than the Right to require Repayment of the Principal Money paid up in respect of the Debenture Stock: Provided always, that if on the Issue of any such Stock the Company shall have agreed to repay the Principal Money at a fixed Time, the Holders thereof shall be entitled to be repaid their Principal Money at such fixed Time. Holders of Debenture Stock not to vote.
7. The Money raised by Debenture Stock shall be applied exclusively either in paying off Money due by the Company on Mortgage or Bond, or else for the Purposes to which the same Money would be applicable if it were raised on Mortgage or Bond instead of on Debenture Stock: Provided always, that the Receipt, Disposal, and Application of all Monies raised by the Debenture Stock shall be at all Times and in all respects subject to the Supervision, Direction, and Control of the Secretary of State in Council of India. Application of Money raised.
8. Separate and distinct Accounts shall be kept by the Company, showing how much Money has been received for or on account of Debenture Stock, and how much Money borrowed or owing on Mortgage or Bond for which they have Power so to borrow has been paid off by Debenture Stock or raised thereby instead of being borrowed on Mortgage or Bond. Separate Accounts to be kept of Debenture Stock.
9. The Powers of borrowing and reborrowing by the Company shall, to the Extent of the nominal Amount of the Debenture Stock for the Time being issued, be extinguished. Borrowing Powers extinguished.

EAST INDIAN RAILWAY.

PROVIDENT FUND.

Rules and Regulations.

1. That the Fund be independent of the Company, but that the management be confided to a Committee of five of its principal Officers, consisting of the Chairman of the Board of Agency, and the Chief Auditor for the time being, with three others, to be selected by the Members of the Fund.

2. That the benefits of the Fund be open to all persons in the service of the Company on the 31st December 1867, in receipt of a monthly pay of Rs. 30 and upwards, who have attained the age of 21 years, or upon their attaining that age; but that it be *compulsory* on persons entering the service after the current year to join the Fund as soon as their pay and age qualify them to become Members.

3. That the Members of the Fund be divided into two Classes, namely, Class "A," consisting of all European Servants of the Company, and Class "B," comprising all Servants of the Company, not Europeans.

4. That from the 1st January 1868 a deduction of 5 per cent. shall be made from the monthly pay of Servants of Class "A," and 2½ per cent. from the monthly pay of those of Class "B," the total realized from time to time being paid over to the Committee for investment.

5. That for the period of Sick Leave or Furlough, the subscriptions shall be assessed on the amount of pay to which the absentees are entitled on return to duty.

6. (1) That the Company shall contribute annually 1 per cent. on the net earnings of the Main Line, after 6 per cent. has been appropriated to the Company and the Government in the terms of their Contract, on the Capital of that Line, together with 1 per cent. on the 6 per cent. so appropriated, so far as the surplus will admit of the said contributions.

(2) That the Company shall contribute annually 1 per cent. on the net earnings of the Jubbulpore Line, after 6 per cent. has been appropriated to the Company and the Government, in the terms of their Contract, on the Capital of that Line, together with 1 per cent. on the 6 per cent. so appropriated, so far as the surplus will admit of the said contributions.

7. That all amounts received by the Committee, from whatever sources, shall be invested in Indian Government Securities, or in the Railway Stock.

8. That as soon after the 31st December of each year as possible, the total investments made from the subscriptions of that year shall be divided (by book entry) between the Members of the

Fund, according to the ratio of subscription of each. In like manner, investments made from the amounts received for interest on the total Stock held by the Fund shall be divided rateably, according to the amount of Stock standing at the credit of each Subscriber.

9. That on the total contributions of a Member reaching a sum of 80% or upwards, and such Member being desirous to bring his wife or family out from England, an equivalent advance may be made to him on the security of the said contributions, to enable him to do so.

10. That on the total contributions of a Member reaching in amount the guarantee security required for its fidelity, it may be assigned to the Company, by way of security, in satisfaction thereof.

11. That no amount shall be claimable until the retirement from service or the decease of a Subscriber. That in the former case the amount of securities, or, at the option of the Committee, its then market value, standing at the credit of the Subscriber at the close of the year preceding his resignation, shall be transferred to him, either in Calcutta or London (at the option of the Committee), his subscriptions for the period subsequent to the close of that year being returned to him in full. A similar plan to be adopted in the case of a person dying whilst in the service; the amount at the credit of the deceased's estate being transferred to his Executors or Administrators.

12. Persons dismissed the service for misconduct shall receive back the amount of their subscriptions only,—less any amount claimable by the Committee on account of guarantee security, or loan,—the balance at their credit, after payment of the above, becoming the property of the Fund.

THE GREAT INDIAN PENINSULA RAILWAY.

PROVIDENT FUND.

Rules and Regulations.

1. The Fund shall be managed, as part of the Company's business, by the Board of Directors of the Company, whose decision shall be final and binding upon all the Members of the Fund; but for its more convenient administration a Committee, in the character of Agents of the Board, shall be appointed, consisting of the following five Officers of the Company in India for the time being, viz., the Company's Agent, the General Traffic Manager, the Chief Resident Engineer, the Locomotive Superintendent, and the Storekeeper, three of whom shall be a quorum. The Committee shall act under the instructions, and their proceedings be subject to confirmation by the Board in all matters not previously distinctly delegated to them, and all such acts of the Committee shall be binding on the Members unless the Board shall otherwise determine.

2. The benefit of the Fund shall be open to all persons in the service of the Company in India on the 30th June 1868 who shall be in receipt of a monthly pay of Rs. 30 or upwards, and have attained the age of 21 years, or upon their attaining that age; but it shall be *compulsory* on persons entering the service after that date to join the Fund on entering, or as soon as their pay and age qualify them to become Members.

3. The Members of the Fund shall be divided into two Classes; namely, Class "A," consisting of European Servants of the Company, and Class "B," comprising Servants of the Company, not Europeans.

4. From the 1st July 1868 a deduction of 5 per cent. shall be made from the monthly pay of each Member of Class "A," and 2½ per cent. from the monthly pay of each Member of Class "B," the total amount deducted from time to time being paid over to the Committee for investment in the names of the Trustees mentioned in Rule 7.

5. For the period of Sick Leave or Furlough, the subscriptions shall be assessed on the amount of pay to which the Member is entitled on return to duty.

6. Whenever the net earnings of the Company of any half-year exceed six per cent. per annum upon the paid-up capital, a proportionate part of one per cent. of such net earnings will be contributed to the Fund, so far as the surplus will admit of the said contribution. This proportionate part will bear to the one per cent. the same relation as the salaries of the Members of the Fund do to those of all the Servants of the Company.

7. All amounts received by the Committee, from whatever sources, after deducting payments and the expenses of managing the Fund, shall be from time to time invested in Indian Government Securities, or in the Stock of the Company, in the names of the Company's Agent and of the General Traffic Manager in India, as Trustees of the Fund.

8. As soon after the 31st December of each year as possible, the total investments made from the subscriptions of that year shall be divided (by book entry) between the Members of the Fund, according to the ratio of subscription of each. In like manner, investments made from other

amounts received and from interest on the total Stock held by the Fund, shall be divided rateably according to the amount of Stock standing at the credit of each Member.

9. On the total subscriptions and share of investments of a Member reaching a sum of 80*l.* or upwards, and such Member being desirous to bring his wife or family out from England, an equivalent advance may be made to him on the security thereof, to enable him to do so.

10. On the total subscriptions and share of investments of a Member reaching in amount the guarantee security required for his fidelity, the same may be assigned to the Company, by way of security, in satisfaction thereof.

11. Except under Rules 9 and 10, no charge shall be made on a Member's subscriptions and share of investments. If a Member retires from the service, the amount of his share of investments standing at his credit on the 31st day of December preceding his retirement, or, at the option of the Board, the market value thereof calculated at the public price of the same day, shall, at the discretion of the Board, either (1) be paid to him in Bombay, or (2) be paid to him in London, or (3) be invested in the purchase of a life annuity for him, or, if he wishes it, for his wife, or a member of his family approved by the Board, and his subscriptions for the period subsequent to such preceding 31st day of December will be returned to him in full. If he dies in the service of the Company the Board may, at their discretion, either (1) pay the amount standing to his credit as above, and his subsequent subscription to his widow, or (2) invest the same in the purchase of a life annuity for his widow, or a member of his family approved by the Board, or (3) they may pay the same to his executors or administrators. Any payment or investment authorized by this rule shall be a discharge to the Fund from the Member's share and interest in the Fund.

12. A Member dismissed the service for misconduct will receive back the amount of his subscriptions alone (without interest), less any amount claimable by the Company, on account of guarantee security, or loan, or on account of money due to the Company by the person dismissed, or lost to them by his misconduct, the balance at his credit, after payment of the above, becoming the property of the Fund.

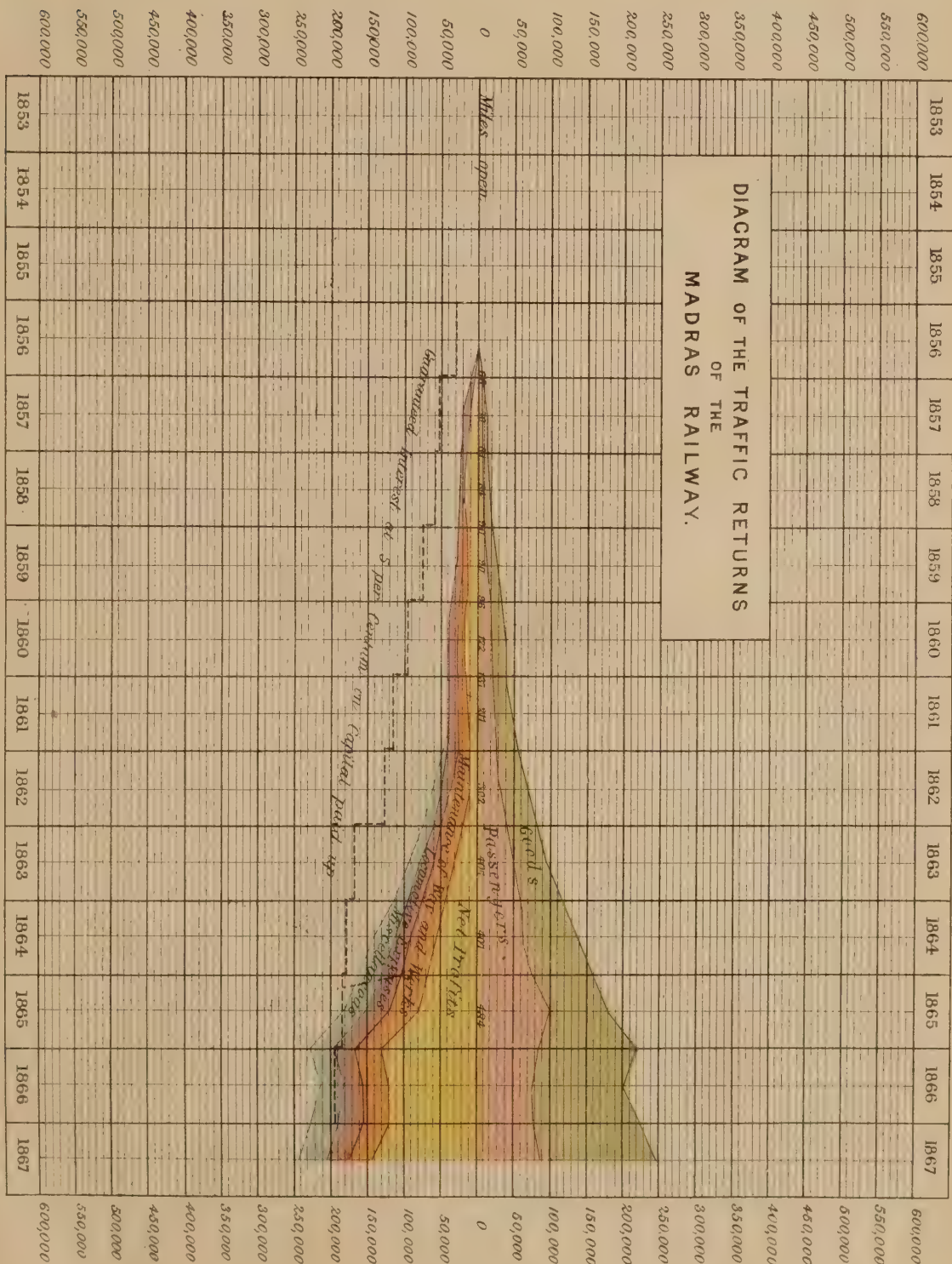
13. Any loss to the Fund, from any cause whatever, shall be borne by the Fund.

14. The accounts of the Fund, as made up from time to time, shall be audited, and their accuracy certified to by the Chief Accountant of the Company.

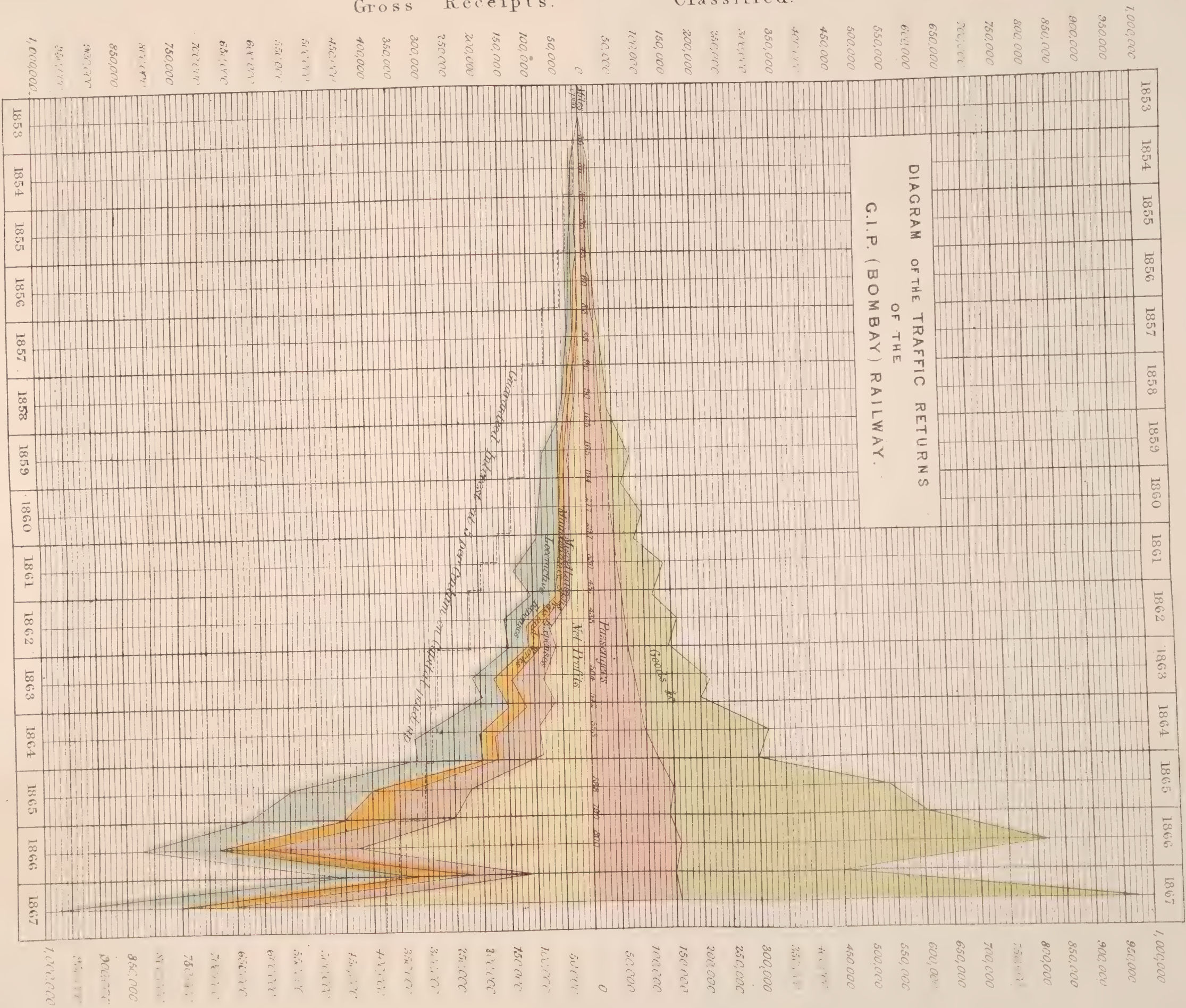
15. The Board, upon the proposition of the Committee, may make any new Rules as occasion shall require.

LONDON:
Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

DIAGRAM OF THE TRAFFIC RETURNS
OF THE
MADRAS RAILWAY.



Half Yearly Amounts.
 Expenditure deducted from Gross Receipts. Gross Receipts Classified.

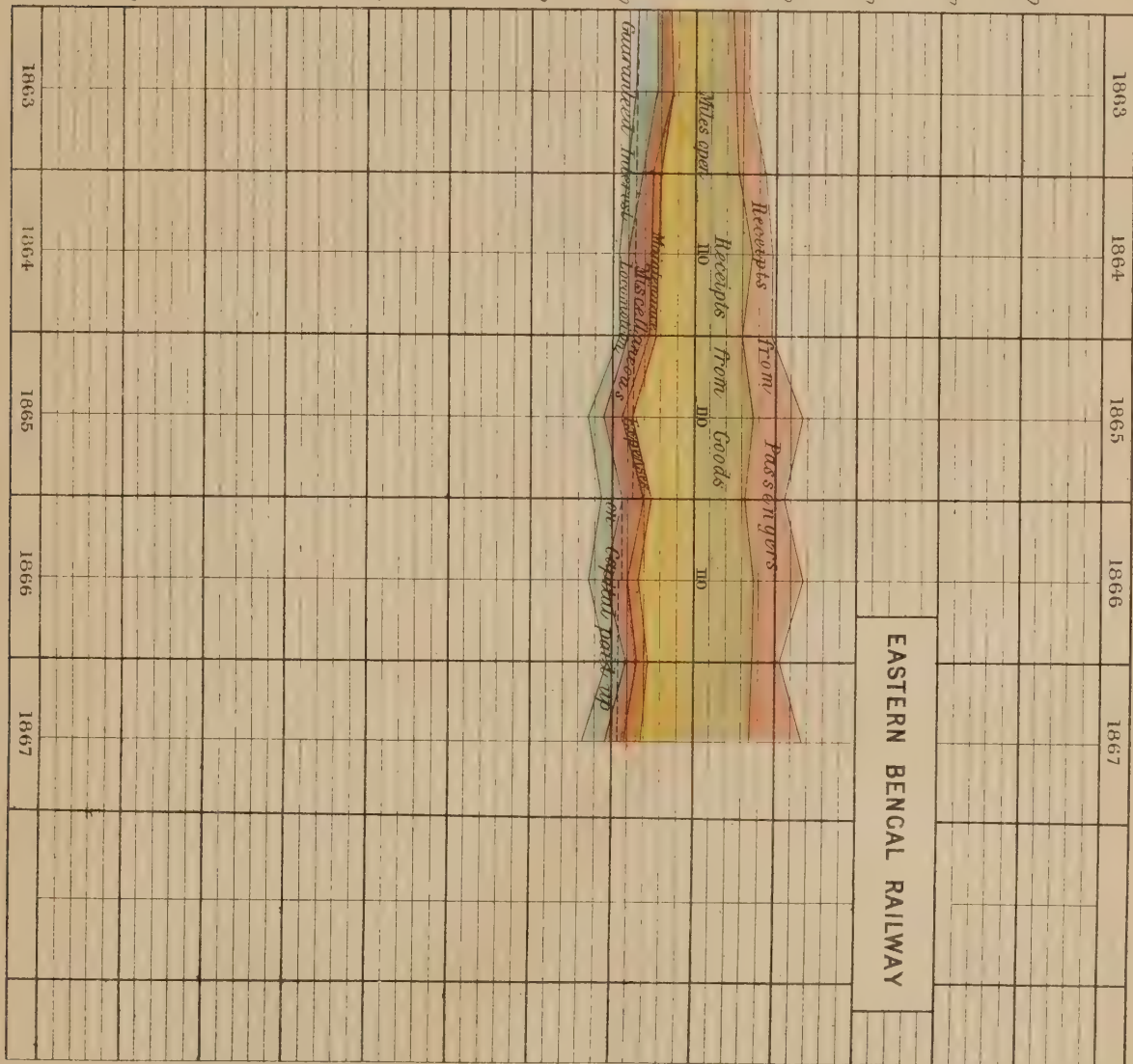


Half Yearly Amounts.

Expenditure deducted
Gross Receipts.

Gross Receipts
classified

350,000
300,000
250,000
200,000
150,000
100,000
50,000
0

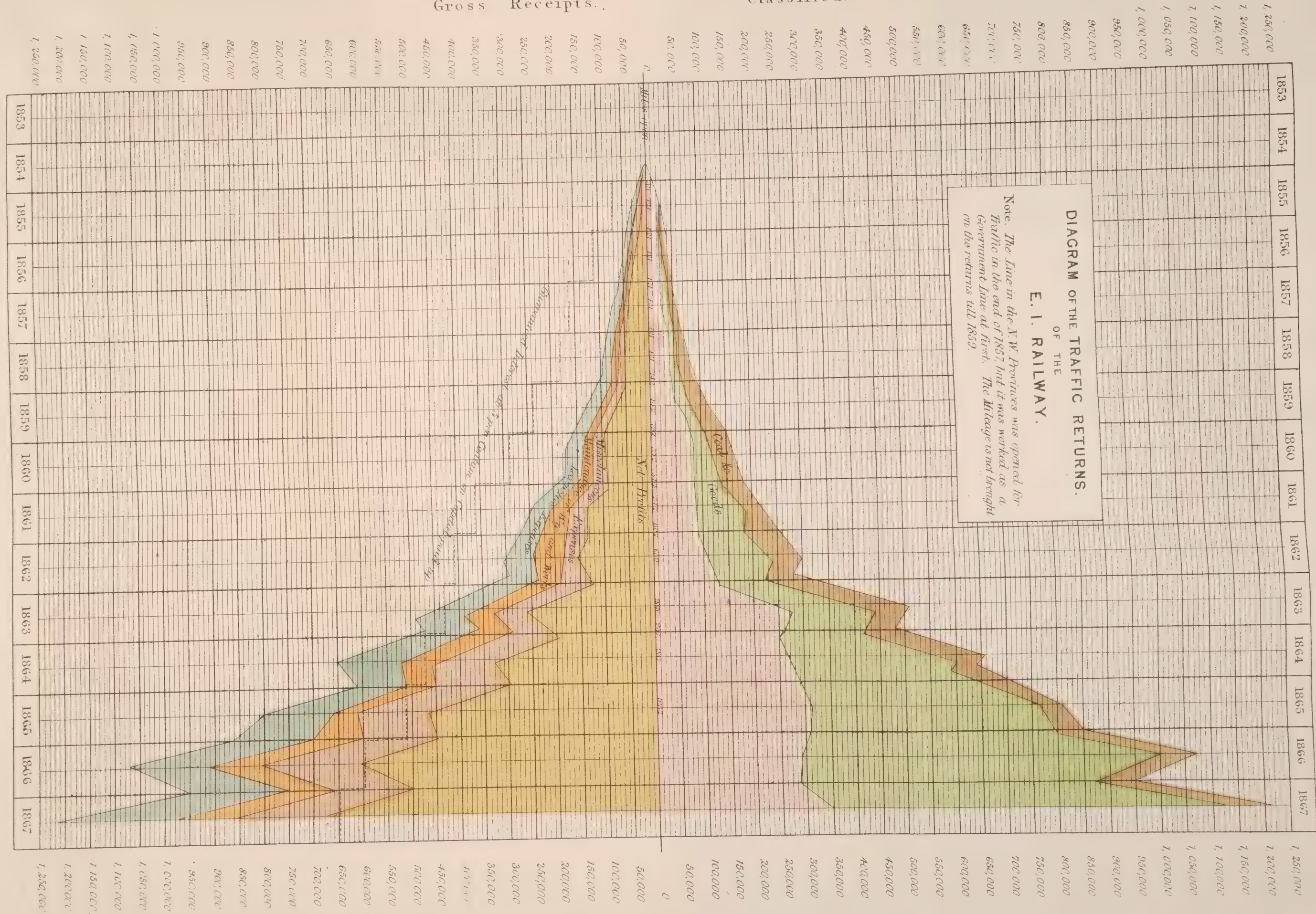


350,000
300,000
250,000
200,000
150,000
100,000
50,000
0

Half Yearly Amounts.

Gross Receipts Classified.

Expenditure deducted from Gross Receipts.



BOMBAY SANITARY COMMISSION.

R E P O R T

OF THE

SANITARY COMMISSION FOR BOMBAY.

1 8 6 6.

India Office, Military Department, }
2 December 1867. }

T. T PEARNS, Major General,
Military Secretary.

(PRESENTED TO PARLIAMENT BY HER MAJESTY'S COMMAND.)

Ordered, by The House of Commons, to be Printed,
3 December 1867.

	PAGE
REPORT - - - - -	5
APPENDIX - - - - -	70
INSPECTION REPORTS - - - - -	95

CONTENTS.

	PAGE		PAGE
Preface - - - - -	5	EUROPEAN TROOPS—Statistical—continued.	
EUROPEAN TROOPS.		Cholera - - - - -	11
Barracks.		Fever - - - - -	11
Space - - - - -	5	Veneral disease - - - - -	11
Barrack design - - - - -	5	Intemperance - - - - -	11
Iron roofs - - - - -	5	Liver disease; dysentery - - - - -	11
Ventilation - - - - -	5	Scurvy - - - - -	11
Disposition of beds - - - - -	6	STATIONAL.	
Doors <i>versus</i> windows - - - - -	6	Military buildings - - - - -	11
Fireplaces - - - - -	6	Monthly report - - - - -	11
Ceilings - - - - -	6	Annual report - - - - -	11
Eaves gutters - - - - -	6	POONA DIVISION.	
Ground-floors - - - - -	6	Poona - - - - -	11
Lavatories.		Kirkee - - - - -	12
Standard plan - - - - -	6	Maunderdeo - - - - -	12
Fittings - - - - -	6	Satara - - - - -	12
Drainage - - - - -	6	Sholapoor - - - - -	12
Basins - - - - -	6	Almednugur - - - - -	12
Material for basins - - - - -	7	Asserghur - - - - -	13
Latrines.		MHOW DIVISION.	
Standard plan - - - - -	7	Mhow - - - - -	13
Dry-earth conservancy - - - - -	7	Indore - - - - -	13
Urinary.		Neemuch - - - - -	13
Construction - - - - -	7	Nuserabad - - - - -	14
Gratings - - - - -	7	Ajmere - - - - -	14
Urinals - - - - -	7	NORTHERN DIVISION.	
Plunge-baths - - - - -	7	Almedabad - - - - -	14
Cook-houses.		Deesa - - - - -	14
Standard plan - - - - -	7	Baroda - - - - -	14
Sinks - - - - -	7	SIND DIVISION.	
Pails - - - - -	7	Kurachee - - - - -	15
Hospitals.		Hyderabad - - - - -	15
Construction - - - - -	7	BOMBAY BRIGADE.	
Dead-house - - - - -	7	Colaba - - - - -	15
Military Prison - - - - -	7	Khandalla - - - - -	16
Dietary.		ADEN BRIGADE.	
Meat - - - - -	8	Aden - - - - -	16
Slaughter-yards - - - - -	8	BELGAUM BRIGADE.	
Foul forage - - - - -	8	Belgaum - - - - -	16
Salt meat - - - - -	8	SANATARIA.	
Vegetables - - - - -	8	Poorundhur - - - - -	17
Wells - - - - -	8	Mount Aboo - - - - -	17
Ice - - - - -	8	Ghizree - - - - -	17
Filters - - - - -	8	Teethul - - - - -	18
Tea-strainers - - - - -	8	Taraghur - - - - -	18
Prisoners' dietary - - - - -	8	TABLES.	
Bedding.		I.—Increase and decrease - - - - -	19
Mattresses - - - - -	8	II.—Married and unmarried - - - - -	20
Hammocks - - - - -	8	Temperance return - - - - -	21
Blankets - - - - -	9	III.—Sickness and mortality during the year - - - - -	21
Clothing.		IV.—Sickness and mortality from classes of disease - - - - -	22
Helmets - - - - -	9	V.—Sickness and mortality from orders of disease - - - - -	22
Light.		VI.—Sickness and mortality from various diseases - - - - -	22
Kerosine oil - - - - -	9	VII.—Sickness and mortality at stations of the Poona Division - - - - -	23
Officers' Quarters.		VIII.—Sickness and mortality at stations of the Mhow Division - - - - -	24
Accommodation - - - - -	9	IX.—Sickness and mortality at stations of the Northern Division - - - - -	24
Military Buildings.		X.—Sickness and mortality at stations of the Sind Division - - - - -	25
Annual Report - - - - -	9	XI.—Sickness and mortality at stations of the Bombay Brigade - - - - -	26
Cantonments.		XII.—Sickness and mortality at stations of the Belgaum Brigade - - - - -	26
Legislation - - - - -	9	XIII.—Sickness and mortality at stations of Aden Brigade - - - - -	26
Boards of Health - - - - -	9	XIV.—Sickness and mortality at Sanataria and depôts - - - - -	27
Veneral disease - - - - -	9	XV.—Sickness and mortality, effectives marching - - - - -	28
Latrines - - - - -	9	XVI.—Sickness and mortality, invalids marching - - - - -	28
Movement of Troops.		XVII.—Stations, arranged in order of the highest ratios of sickness and mortality during the year - - - - -	28
Rest-houses - - - - -	10		
Overland transport - - - - -	10		
Ventilation - - - - -	10		
Antiscorbutics - - - - -	10		
STATISTICAL.			
Increase and decrease - - - - -	10		
Marriage - - - - -	10		
Sickness and mortality - - - - -	10		
Violence - - - - -	11		

	PAGE
NATIVE TROOPS.	
<i>Lines.</i>	
Drainage - - - - -	29
<i>Latrines.</i>	
Design - - - - -	29
Standard plan - - - - -	29
Accommodation - - - - -	29
<i>Hospitals.</i>	
Construction - - - - -	29
Hospital servants - - - - -	29
STATISTICAL.	
Increase and decrease - - - - -	29
Sickness and mortality - - - - -	29
Poona - - - - -	29
Sholapoor - - - - -	29
Seroor - - - - -	30
Ahmednugur - - - - -	30
Malligaum - - - - -	30
Aseerghur - - - - -	30
Dhoolia - - - - -	30
Maunderdeo - - - - -	30
Mhow - - - - -	30
Indore - - - - -	30
Augur - - - - -	30
Mehidpoor - - - - -	30
Neemuch - - - - -	30
Nuseerabad - - - - -	30
Surat - - - - -	31
Broach - - - - -	31
Baroda - - - - -	31
Ahmedabad - - - - -	31
Deesa - - - - -	31
Rajkote - - - - -	31
Porebunder - - - - -	31
Dwarka - - - - -	31
Bhoj - - - - -	31
Burda Chowkee - - - - -	31
Kurachee - - - - -	32
Hyderabad - - - - -	32
Jacobabad - - - - -	32
Bombay - - - - -	32
Tanna - - - - -	32
Kolhapoor - - - - -	32
Kuladghee - - - - -	32
Belgaum - - - - -	32
Dharwar - - - - -	33
Aden - - - - -	33
Perim - - - - -	33

TABLES.

XVIII.—Increase and decrease - - - - -	33
XIX.—Sickness and mortality during the year - - - - -	34
XX.—Sickness and mortality from classes of disease - - - - -	34
XXI.—Sickness and mortality from orders of disease - - - - -	34
XXII.—Sickness and mortality from various diseases - - - - -	34
XXIII.—Sickness and mortality at stations of the Poona Division - - - - -	35
XXIV.—Sickness and mortality at stations of the Mhow Division - - - - -	36
XXV.—Sickness and mortality at stations of the Northern Division - - - - -	36
XXVI.—Sickness and mortality at stations of the Sind Division - - - - -	38
XXVII.—Sickness and mortality at stations of the Bombay Brigade - - - - -	38
XXVIII.—Sickness and mortality at stations of the Belgaum Brigade - - - - -	38
XXIX.—Sickness and mortality at stations of the Aden Brigade - - - - -	39
XXX.—Sickness and mortality, Troops marching - - - - -	40
XXXI.—Stations, arranged in order of highest ratios of sickness and mortality during the year - - - - -	40

CANTONMENTS.

Sickness and mortality - - - - -	41
Deaths in Poona - - - - -	41
Ditto - Poorundhur - - - - -	42
Ditto - Satara - - - - -	42
Ditto - Sholapoor - - - - -	43
Ditto - Seroor - - - - -	43
Ditto - Ahmednugur - - - - -	44
Ditto - Malligaum - - - - -	44
Ditto - Aseerghur - - - - -	45
Ditto - Dhoolia - - - - -	45
Ditto - Mhow - - - - -	46
Ditto - Mehidpoor - - - - -	46
Ditto - Neemuch - - - - -	47

	PAGE
CANTONMENTS—continued.	
Deaths in Nuseerabad - - - - -	47
Ditto - Surat - - - - -	48
Ditto - Baroda - - - - -	48
Ditto - Ahmedabad - - - - -	49
Ditto - Deesa - - - - -	49
Ditto - Rajkote - - - - -	50
Ditto - Bhoj - - - - -	50
Ditto - Kurachee - - - - -	51
Ditto - Hyderabad - - - - -	51
Ditto - Jacobabad - - - - -	52
Ditto - Bombay - - - - -	52
Ditto - Kolapoor - - - - -	53
Ditto - Kuladghee - - - - -	53
Ditto - Belgaum - - - - -	54
Ditto - Aden - - - - -	54

COLLECTORATES.

Sick Travellers - - - - -	55
Pilgrimage tax - - - - -	55
Cholera - - - - -	55
Water supply - - - - -	55
Infant burial - - - - -	55
Emigration - - - - -	55
Census - - - - -	55
Death rate - - - - -	55

TABLES.

Deaths in Tanna - - - - -	56
Ditto - Surat - - - - -	56
Ditto - Ahmedabad (only Duskurohee Talook) - - - - -	57
Ditto - Panah Mahal - - - - -	57
Ditto - Kaira - - - - -	58
Ditto - Khandeish - - - - -	58
Ditto - Ahmednugur - - - - -	59
Ditto - Poona - - - - -	59
Ditto - Sholapoor - - - - -	60
Ditto - Satara - - - - -	60
Ditto - Kuladghee - - - - -	61
Ditto - Belgaum - - - - -	61
Ditto - Dharwar - - - - -	62
Ditto - Canara - - - - -	62
Ditto - Rutnaghiree - - - - -	63
Ditto - Kurachee - - - - -	63
Ditto - Hyderabad - - - - -	64
Ditto - Shikarpoor - - - - -	64
Ditto - Upper Sind - - - - -	65
Ditto - Thur and Parkur - - - - -	65
Return of casualties by violence - - - - -	66

GAOLS.

Construction - - - - -	67
Statistics - - - - -	67
Sickness and deaths - - - - -	68

MISCELLANEA.

Commission - - - - -	69
Inspections - - - - -	69
Standard plans - - - - -	69
President - - - - -	69
Meteorology - - - - -	69

APPENDIX.

I.—Barrack distribution return - - - - -	70
II.—List of works of construction, &c. in barracks and hospitals - - - - -	74
III.—Principles of construction of hospitals for European and native troops - - - - -	82
IV.—General orders of Government and of the Commander in Chief relating to the sanitary condition or comfort of the troops - - - - -	89
V.—Rules for the better conservancy of military cantonments in this presidency - - - - -	90
VI.—Diet table for military prisoners, above a month in prison, and at hard labour - - - - -	91
VII.—Analyses of waters - - - - -	92
VIII.—Rules for the ventilation of transports - - - - -	94
IX.—Rules for the treatment of sick travellers by village patels - - - - -	94

INSPECTION REPORTS.

Report on the Inspection of the Cantonment of Ahmedabad - - - - -	95
Report on the Inspection of the Artillery lines, Baroda - - - - -	100
Report on the Cantonments and Military Buildings at Kurachee - - - - -	106
Report on the Artillery or Somerset Barracks - - - - -	108
Report on the Napier or European Infantry Barracks - - - - -	114
Report on the Fitzclarenc or Depôts Barracks - - - - -	119
Report on the Native Infantry Lines - - - - -	120
Report on the Gizree Sanitarium - - - - -	121
Report on the sanitary condition of the town of Kurachee - - - - -	123
Report on the gaol at Kurachee - - - - -	131

REPORT

OF THE

SANITARY COMMISSION FOR BOMBAY,

FOR THE YEAR 1866.

A BRIEF notice of the subjects pertaining to sanitary measures, which have engaged attention during the year, seems all that is necessary, as these matters have been dealt with in detail in the printed proceedings of the Commission, published monthly. Prefatory.

It having been brought to the notice of Government that a more general distribution of the monthly printed proceedings of the Commission was desirable, a large increase was, under sanction, ordered of the number of printed copies, and these are now placed in the hands of all heads of departments, and in those of the Quartermaster General of the Army, and of Chief and Superintending Engineers, in sufficient numbers to afford a copy to each officer under them. Printed Proceedings.

EUROPEAN TROOPS.

BARRACKS.

The work requisite for affording to European troops the regulated space per man has made much progress, and it is believed that, taking together permanent and temporary constructions, the floor superficies of 90 feet per man is now available for the standard garrisons of all stations within the Bombay Command. Space.

Deficiency still exists in the barracks at some stations as regards cubic capacity. A copy of a barrack distribution return, prepared in the office of the Quartermaster General of the Army, is printed in the Appendix.

Numerous plans and specifications in connection with proposed new barracks have come under review during the year, and, under instructions from Government, Colonel Bell, R. E., Superintending Engineer, Northern Division, and a member of the Commission, undertook the work of preparing for general guidance, a plan of barrack, modified from the Bengal standard plan of artillery barrack, to suit the requirements of this Presidency, and, in communication with the Sanitary Commission, has furnished a design, with enlarged drawings of details, lithographed copies of which have (since the close of the year) been circulated by Government. Barrack design.

A proposed arrangement for deadening the sound of rain on iron roofs for barracks and hospitals, by the introduction of a layer, about three inches in thickness, of charcoal consolidated with lime grout, immediately over the plank lining of the roof, was brought forward by Colonel Bell, R. E., Superintending Engineer, Northern Division, and has been adopted, but the result has not as yet been stated. Iron roofs.

The ventilation of barracks and hospitals has received much consideration, and on its being decided to adopt for the ventilation of the ground floors of upper-storied barracks—in place of the older system of numerous, and sometimes very irregular, small horizontal outlets,—the improved system of few and carefully built outlets of larger section, in the form of vertical shafts piercing the masonry walls of the upper storey or storeys, the Sanitary Commission recorded their opinion that for such shafts a proportion of one superficial inch of transverse sectional area to every twenty solid feet of the rooms' space would suffice, but, Ventilation.

under the opinion of His Excellency Sir Robert Napier, Government have decided that the sectional area of the air shafts shall be twice as large as that noted above.

Disposition of Beds. In supplement of the principles of barrack construction issued by the Government of India, and printed in the Appendix to last year's report, the following was published:—"that there shall be only two rows of beds in a ward; that no beds shall be placed within nine inches of a door; and that not more than two beds shall be allowed in the wall space between two contiguous doors." The Army Sanitary Commission in England questioned whether the above arrangement would afford sufficient shelter from draughts, and advised the use of chicks or small screens. It was considered, however, by authorities in India that the Sanitary Commission in England held an exaggerated opinion of the injurious effects of draughts in the plains of India.

Doors versus windows. The question of the proper relative proportion of doors and windows in barracks was referred for the opinion of numerous officers, and of the Sanitary Commission. The weight of the opinions tended to the view that, as a rule, in stations on the plains in this Presidency all side openings should be doors, and that in hill stations windows should be introduced in lieu of doors in a proportion varying according to circumstances.

Fireplaces. The provision of fireplaces in the ground-floor rooms of barracks, on the plains (where thought desirable), and in all rooms at hill stations, was ordered by the Government of India. Ahmedabad, Deesa, Mhow, Neemuch, Nuseerabad, and Belgaum have been specified as stations in this Presidency where such provision should be made. Details of such fireplaces as are adapted to wood fires are among the plans noticed above as approved by the Sanitary Commission, and recently circulated by Government.

Ceilings. The necessity for giving double roof coverings to all buildings on the plains occupied by European troops was also notified by the Government of India, and various arrangements for effecting this object in the best manner have been under consideration by the Commission.

Eaves-gutters. The provision of eaves-gutters to the roofs of all buildings in this Presidency has been invariably represented as necessary by the Sanitary Commission.

Ground-floors. The appropriation of the ground-floor of all barracks for day-rooms and other auxiliary accommodation was decided on by the Government of India. The introduction, however, of the canteen, or of workshops for offensive and noisy trades, into the main barrack buildings has been noted by the Commission as objectionable.

LAVATORIES.

Standard plan. An approved plan of lavatory was circulated by the Government of India in substitution of that previously issued. It was considered that the building would be better ventilated, and that it would be equally convenient, if the bath rooms were arranged at the ends instead of along the sides, and a plan on this principle, prepared by Mr. Howard, Executive Engineer, Poona and Kirkee, received the general approval of the Commission, pending questions of some details.

Fittings. The supply of water to lavatories by gravitation, and the provision of supply, overflow, and discharge pipes in connection with fixed basins have been steadily advocated by the Commission. The introduction of foot pans, alternating with the basins, and supported on brackets, was also recommended.

Drainage. The conveyance of the waste water by pipe to a distance, to be discharged into an excavation, filled in with dry rubble, on the bank of a nulla, has been represented as desirable.

Basins. The necessity for providing portable basins for use on the march, in hospitals, and on occasions when ophthalmia or other like contagious disease is prevalent in a regiment, came under consideration, and the question of the proportion in which the basins should be issued was referred to the Commission, who expressed an opinion that for ordinary occasions 20 per cent. would suffice. It was subsequently settled at army head-quarters that every soldier should have his own basin, but the authorities in England have demurred to such a proposition.

Enamelled

Enamelled iron basins have been in use in some corps, but no report as to their adaptability or otherwise for barrack use has been made; it has, however, been casually observed that the enamel is apt to crack, and that the basin is not durable. Material.

LATRINES.

In consultation with the Commission, Colonel Bell, R. E., prepared a design and specification for a latrine on the dry earth conservancy principle, suitable for European troops. The design has been lithographed, and copies have been circulated by Government for general guidance. Standard plan.

The alteration of latrines to adapt them to the dry earth system of conservancy has been generally completed, and that system is believed to be now followed in all corps in this Presidency, except in the Colaba garrison. There can be no question as to the great sanitary advantages which the adoption of dry earth conservancy in latrines has produced, and in practice the system seems to be working satisfactorily. Dry-earth conservancy.

URINARIES.

The approved temporary structure, which entails no masonry work, has been provided conveniently near all barracks, and answers its purpose well. Construction.

To prevent the feet being soiled by the damp or wet earth in the tray in which the urinal vessel is placed, a circular iron grating, to place over the tray, and on which a man could stand, was designed, and the making of a number has been ordered with a view to trial. Gratings.

The substitution of glazed earthenware vessels for those in use, of metal, was considered. On inquiry it was found that the sort of vessel required could not be manufactured at any place in the Bombay Presidency. Urinals.

The provision of urinaries at plunge baths, so as to check any propensity in a man to defile the water in the bath, has been represented as requisite. Plunge baths.

COOKHOUSES.

A plan was prepared, under the supervision of the Commission, and has been lithographed, and (since the end of the year) circulated by Government for general guidance. Standard plan.

The objectionable sinks inside the cookrooms, with outflow into cesspools, close outside the walls, have been done away with, and a plan of raised sinks, placed in verandahs and discharging into tank-carts, has been adopted. Sinks.

In the smaller cookrooms of family quarters and battery hospitals, &c., the raised sinks were not considered necessary; the use in them of galvanized iron pails was recommended. Pails.

HOSPITALS.

The principles of hospital construction, issued by the Government of India, are recorded in the Appendix. Construction.

A design for a dead-house on an approved plan was prepared under the supervision of the Commission, and has been lithographed, and (since the end of the year) circulated by Government for general guidance. Dead house.

MILITARY PRISON.

The formation of a prison for 50 European military prisoners at Panchugunnee has been determined on, and, in communication with the Inspector General of Prisons, and the Executive Engineer, Sattara, a decision has been come to as to the arrangement and general disposition of the buildings.

DIETARY.

- Meat.** The poor quality of the meat generally supplied to the troops by contractors was strongly commented on by Sir Robert Napier, and on his recommendation the Commissariat were instructed to arrange for supplying meat departmentally at all stations.
- Slaughter yards.** It being brought to notice that it was undesirable, as affecting the live animals, that sheds for cattle should be contiguous with slaughter yards, as before proposed, the Government of India directed that the two be kept entirely separate.
- Foul forage.** The feeding of milch and other cattle on foul forage was brought to notice by the military authorities in Sind, which led to recommendations being made with the view of stopping the obnoxious practice; these comprehended the fencing of manure yards, the burning of stable litter, where it could not be disposed of *bonâ fide* for manuring land, the making of special stipulations on the point in contracts with dairymen, and the enforcing of the rule that animals shall be fed for 30 days at least in the Commissariat yards before they are slaughtered.
- Salt meat.** It having been brought to notice that, on the occasions of condemnation of the meat rations by committees, there was difficulty in procuring a supply for the day, Sir Robert Napier proposed that a stock of salt meat should be kept to meet such emergencies, and the proposal was ordered to be carried out at two stations by way of experiment.
- Vegetables.** Owing to the scarcity and high price of vegetables at some stations, a reference was made to the Commission as to whether European vegetables, when only procurable at such high rates, should be supplied to British troops. It was ordered by Government, in accordance with the recommendation made, that, without reference to cost, of the eight ounces of green or succulent vegetables forming part of the ration, four ounces should be of European kinds.
- Wells.** The liability of well water to pollution, owing to defilement of the ground immediately around wells, was pointed out in connection with a reference relative to the prevalence of guinea-worm among the native troops at Poona, and directions were given that the circuit of all wells in cantonments, which afford drinking water, should be paved and drained. This correspondence was re-published by the Government of India for information and guidance.
- Ice.** The subject of supplying troops, at several stations, with ice, was mooted, and application was made to the Secretary of State for India for an ice machine, which it was proposed to use experimentally at a station in Rajpootana.
- Filters.** The inefficiency of the mode of filtration of drinking water, at present followed in barracks, came under notice, and steps have been taken to procure 50 patent filters from England for trial.
- Tea strainers.** Tea-strainers, recommended by the Commission, having been tried in two regiments, and very favourably reported on as instruments for tea-making, were sanctioned as an article of barrack supply, and measures were taken for procuring them, made of the best block tin.
- Prisoners' dietary.** The inadequacy of the food allowed to military prisoners was brought under notice by the officer in medical charge of the 26th (Cameronian) Regiment, and a suitable diet table was prepared, and Government ordered its adoption. (Appendix.)

BEDDING.

- Mattresses.** The President, having noted that in an abstract in advance for compensation in lieu of articles of bedding, about half of the regulated number of mattresses to which the particular regiment was entitled was included, represented that it was objectionable that *mundas* that had already been two years in use should be continued to be used, and recommended that these articles of bedding should be always issued in kind. Government passed an order to that effect.
- Hammocks.** A hammock for use in the field was exhibited by the inventor, Captain McGwire, 1st Royal Regiment, to the Commission, and was reported on as calculated

lated to be useful; objections on the score of heat in a tropical climate being at the same time pointed out.

The necessity of supplying additional bed clothing to soldiers and soldiers' wives at hill stations was represented to Government, and an opinion was expressed that good European blankets should be issued to all and sundry pertaining to the non-commissioned rank and file on embarkation for England, and that it was objectionable that bedding that had been long in use should be taken on board ship. Blankets.

CLOTHING.

Several medical officers recorded their opinion that the helmet recently introduced is a very defective protection from the sun for some parts of the head. Helmets.

LIGHT.

A recommendation was submitted to Government that a trial should be made with kerosine oil for lighting barracks. The reports on the subject were unsatisfactory, in as far as they did not deal with the illuminating power of the oil. The Government of India having, in the interval, sanctioned the lighting of all hospitals with kerosine oil, it was suggested that information on the subject should be called for from Calcutta, and a communication on the point is now awaited. Kerosine oil.

OFFICERS' QUARTERS.

On a design for officers' quarters, submitted by the Commission in compliance with a request of the Government of India relative to the report by the President on the quarters occupied by officers at Poona and Bombay, a correspondence arose which led to the proposed accommodation being contrasted with that sanctioned for Serjeant-majors and Serjeants of Class A, with a view to showing that what was asked for for an officer was not excessive. Two designs for officers' quarters were at the same time submitted, and Government sanctioned their being considered alternative plans. Accommodation.

MILITARY BUILDINGS.

An order was issued by the Commander in Chief that committees of officers of standing and experience should be assembled on the 1st of August at each station to inspect military buildings, and to furnish a list of the new works, alterations, additions, and repairs that had been effected, were in progress, or seemed requisite or desirable. Annual report.

CANTONMENTS.

Authority was obtained for the local legislation to pass a "Cantonment Act," the point of levying municipal taxes being, however, reserved for further consideration. An Act has been drafted. A set of "cantonment rules" framed by a special committee convened at Simla were submitted to the Commission for report regarding their suitability for Bombay stations. Legislation.

Boards of Health were established at every station, and rules relative to the conservancy of cantonments, supplementary to those existing, were submitted by the Quartermaster General, and approved and published by Government. (Appendix.) Boards of Health.

Rules for the prevention of venereal disease were promulgated under clause 7 of Act XXII. of 1864. It is not known that any action has been taken in the matter at any station in the Bombay Presidency, except at Nuseerabad. Venereal disease.

Government authorised the provision of latrine accommodation for camp followers and those residing in cantonment bazaars. Latrines.

MOVEMENT OF TROOPS.

Rest-houses:

Orders were issued for the provision of rest-houses, at intervals of from 200 to 250 miles apart, on lines of railway. Exception was taken by the Commission to the 65 superficial feet and 1,040 cubic feet of space per man laid down as to be provided in the barracks for single men, it being reasonably argued that better provision is made in guard rooms for prisoners detained for one night, and that the traveller should not be worse off than the prisoner. The objection to lodging the serjeants entirely in the verandas, and thus excluding them from sharing in the shelter from heat and in the ventilation provided for the men, was pointed out, and also that the probable presence of children had apparently been lost sight of in fixing the space allowed for families; 16 feet square was specified as room, which would be no more than enough for a family.

Overland transport.

In a reply to a reference made by Government on the subject, the stations that may be considered accessible or inaccessible, as regards the movement of troops with a view to their embarkation in September, were specified.

Ventilation.

The President was called upon by Government to frame rules to be followed in providing for the ventilation of troop-ships. (Appendix.)

Anti-scorbutics.

A correspondence, relative to the quantity of lime-juice and sugar provided for troops on the voyage to England, led to an order that, for invalids, 75 lbs. of each per 100 men should be shipped in addition to the allowance for regular issue of half an ounce per day for the first 20 days, and one ounce per day for the remaining days of the voyage.

STATISTICAL.

Increase and decrease.

The strength of the European army serving in the Bombay Presidency on the 1st of January 1867, according to a return furnished by the Adjutant General of the Army, was 14,404, which is 1,780 men more than on the corresponding date of the year 1866.

The return deals with a gross total of 15,257 effective men.

After deducting 531 men lost to the effective strength from other causes than those pertaining to health, and basing calculations on the remainder, it is found that the loss by invaliding amounted to 35.7 and by death to 10.1 men in every thousand. Sickness thus operated in diminishing the strength of the effective army during the year to the extent of nearly 46 men in every thousand.

Marriage.

The proportion of married men among the private soldiers on the 1st day of May 1866 was as follows:—

Artillery	-	-	-	-	-	8.9	per cent
Infantry	-	-	-	-	-	7.8	„ „
Cavalry	-	-	-	-	-	5.3	„ „

The proportion varied in the Artillery from over 16 per cent. in No. 4 Battery, 21st Brigade, to less than 1½ per cent. in G. Battery, 14th Brigade. In the Infantry from over 9 per cent. in the 26th Cameronians and the 103d Fusiliers to about 5 per cent. in the 96th Regiment. In the Cavalry, the 3rd Dragoon Guards had 7.3 per cent. married, or in a somewhat smaller strength had double the number of married men that there were in the 6th Inniskilling Dragoons.

Sickness and Mortality.

The medical returns deal exclusively with the non-commissioned rank and file of corps, the “effectives,” of the army, and embrace the period from 30th December 1865 to 28th December 1866. Out of a (weekly) mean strength of 12,051 there were 717 men constantly sick, and 153 died; or approximately the services of six out of every one hundred men were wholly lost through sickness, and five out of every four hundred men died.

The sickness has been slightly greater, the mortality less, than in the preceding year.

The rate of mortality for the year 1863 (12.03 per mille) is the lowest that has been attained in the Bombay army; the rate for the year 1866 (12.7 per mille) closely approaches it.

After deduction of 15.4 from the rate of mortality in 1865, which figures represent the mortality of that year, due to the greater prevalence of cholera, a balance

balance of 7 per mille in favour of 1866 is still apparent, and is contributed to by a slightly diminished death rate in all the diseases which have afforded fatal cases.

1,246 admissions into hospital and 27 deaths were occasioned by violence ; numbers which bear a ratio to strength nearly equal to that of the previous year. A less severity in the nature of the injuries is indicated by a considerable decrease in the number of fatal cases. Violence.

There has been an almost entire immunity from cholera during the year ; the returns show only eight cases, seven proving fatal. One of these cases occurred at Kirkee, all the others at Poona. One case occurred at Belgaum in the 26th Regiment, the man being a patient in hospital when attacked, and another in the artillery at Ahmedabad ; these two cases seem to have been omitted from the returns. Cholera.

Malarious fever has been considerably less prevalent and much less fatal than in the preceding year, but has been the cause of four times more sickness than any other one disease, except venereal. Fever.

There were 2,556 admissions from venereal disease, which gives a ratio of 212 per thousand men, and shows a greater prevalence of the disease by 10·3 per mille than in the previous year ; it has been the cause of 15 per cent. of the entire sickness. Venereal disease.

The statistical hospital returns cannot be viewed as giving reliable information regarding the prevalence of drunkenness in the army or the effects of intemperate habits on health and efficiency. There is no doubt that many cases of disease, attributable to indulging in liquor to excess, are entered in the returns under other heads than those of "delirium tremens" and "ebriositas." Severe forms of disease, directly attributable to excess in stimulants, seem to have been much less common than in the preceding year. Intemperance.

Liver affections were proportionally most common at Khandalla, Sholapoor, Kirkee, and Neemuch ; dysentery at Khandalla, Belgaum, and Bombay. Liver disease ; Dysentery.

Scurvy has been twice as prevalent as in the preceding year. Poona afforded the greatest number of cases, which is explicable on the score of the 45th regiment having arrived from Neemuch much debilitated. Mhow, Kurachee, Aden, and Nuseerabad afforded cases in considerable numbers, and in degree according to the order in which they are named. Scurvy.

STATIONAL.

A detailed statement, furnished by executive engineers, of the works completed, in progress, or contemplated, in connection with military buildings, forms part of the Appendix. Military buildings

The monthly statistical and sanitary reports, rendered by the medical officers of corps, were obligingly sent to the Commission, for perusal, by the Inspector General, Indian Medical Department. Monthly reports.

Reports of the sanitary condition of stations, embracing the whole year, were likewise received from senior medical officers in accordance with the instructions of the Secretary of State. Annual reports

From these and other sources the following information has been gathered :

POONA DIVISION.

Poona.—Fever was nearly twice as prevalent at this station as generally throughout the army. Dysentery, diarrhoea, scurvy, and liver complaint prevailed beyond the average.

There was relatively less sickness, but a considerably higher rate of mortality, than at Kirkee.

A few cases of cholera occurred in August among the troops occupying the depôt lines ; the usual means of checking the disease were promptly adopted.

The barrack and hospital accommodation of the station had undergone considerable improvement.

The surface drainage at Ghorepooree had been much improved.

The hospital accommodation was insufficient, and one of the new barracks had been used as a hospital.

The accommodation of the depôt was, as usual, supplemented by the use of tents at the crowded season.

A census of the cantonments of Poona and Kirkee was taken on the 12th December 1865, and gave a total of 34,315 souls. The garrison of Poona was at the time deficient by the absence of a wing of each of two European regiments.

Kirkee.—The sickness among the troops at this station was above, and the mortality under, the average; the excess of sickness being chiefly attributable to the prevalence of fever, scurvy, diarrhoea, and liver disease also prevailed.

A few cases of cholera occurred in the station; in one instance only was the subject of the disease a soldier.

The conservancy establishment was reported insufficient.

A site in the neighbourhood of Kirkee for upper-storied barracks, to accommodate a whole regiment of infantry, has been determined.

The carrying out the project of conveying water from the Pashan valley was sanctioned, and the work has been commenced.

Maunderdeo.—The returns from this station embrace the period from 2nd March to 22nd June.

The men were accommodated in tents; the sickness was small, and there was no casualty.

In the beginning of the year it was reported that Maunderdeo was preferable to Panchgunnee for occupation by troops in the hot season, chiefly on account of the greater facility in obtaining water.

Satara.—The troops at this station did not maintain the high standard of health exhibited in the returns of the previous year. There was a large increase of admissions from all the specified diseases, except venereal disease, in which a decrease of 164·4 per mille appears. The type of disease, however, is reported to have been very mild, and but one case proved fatal.

The barrack accommodation has been increased. The floors of the old barracks are paved with roughly-cut stone, and are found difficult to keep dry, as water lodges in the depressions.

The accommodation in the fort was taken advantage of during the hot weather, 50 men being lodged there for a month at a time.

Sholapore.—The health of the troops at this station was highly satisfactory, but liver complaint appears to be comparatively common, the cases having been proportionately numerous during the last three years. Other diseases were not prevalent.

The barrack accommodation had been increased.

The harness is still kept in the dormitories.

Ahmednugur.—The health of the troops was very good throughout the year. There seems to have been a great immunity from malarious fever. Venereal disease was much the most prevalent affection, and the senior medical officer remarks that a lock hospital is greatly wanted.

Much had been effected to improve the general barrack accommodation. A site has been determined for new Artillery barracks, and material for their construction was being collected.

Tents had been used in supplement of accommodation, and some single men had been lodged in the patcheries, which are ill-ventilated. The temporary patcherry buildings, occupied by the families of the Artillery, are “wretched” quarters.

A proposal to extend the cantonment limits had been entertained, and its adoption is considered very desirable.

The village of Bhingar had undergone some improvement.

Water from the Shahpore aqueduct was expected to be soon available. The water now used is liable to pollution, when passing through the aqueduct in the village of Bhingar. “A dead native was fished out of the aqueduct * * * who must have lain a week or 10 days there.”

The accommodation at Sulabut Khan's Tomb was taken advantage of in the usual way, both for convalescents and men in health.

Aseerghur.—Almost the whole sickness of this station was attributable to malarious fever, which seems to have prevailed, considerably above the average of other stations. The general health was very good; there was but one death, which was caused by dysentery. The station was occupied by European troops only from the 12th May.

The lavatory accommodation had been improved, but, owing to some imperfection in the outlet water-pipes, had been but little used.

“During the months of September and October considerable malarial unhealthiness prevailed at this station owing to rank vegetation.” The medical officer represents that prompt measures were not taken for its removal.

A woman was employed in keeping a watch on the prostitutes, and was the means of bringing some infected women for treatment, and of others leaving the place. The admissions from venereal disease among the troops was 61·2 per mille. In the preceding year they were 139·3 per mille.

Owing to the work of removal of the silt from the tank being in progress, a detachment intended for Aseerghur was detained at Khandalla till May, until the silt was in a state as to dryness that did not leave any apprehension of harm.

MHOW DIVISION.

Mhow.—The admissions from fever at this station amounted to nearly double the general average, yet were nearly a third less than in the preceding year. No other disease was prevalent. The mortality was small, only 7·8 per mille.

Drainage works had been carried on, but the low swampy ground south-west of the Infantry barracks remained as before.

Sanction was accorded to the use of punkhas and tatties in barracks and hospitals during the hot season.

The question was mooted whether, at Mhow and other stations in Malwa, owing to the nature of the soil, the rule for the provision of double-storied barracks, in which the upper floors only are used as dormitories, might not be departed from. The Government of India decided that it was inadvisable to occupy the lower floor of barracks at Mhow permanently as dormitories.

A proposition was made that there should be a place within a short distance of Mhow to which invalids might be sent for change of air, and to which soldiers might resort for recreation during the cooler months; it was recommended that accommodation should in the first place be provided for 20 men.

It was proposed to increase the quantity of water in the wells by raising the water level in the Gumbeer Nulla by means of dams; but it was feared that the natural subsoil drainage would be thereby checked, and injurious marsh produced. The deepening of the wells by five or ten feet, it was thought, would probably produce a larger result than dams, except in the immediate neighbourhood of these.

The occupation of the Cavalry stables at Mhow, and the accumulation of litter in close proximity to the barracks and to windward of them, were the subjects of considerable correspondence. The medical officer of the 6th Dragoon Regiment considered these the causes of increased sickness from fever. The stables were ultimately vacated, and the litter was removed.

Indore.—The troops at this station were relieved every month from Mhow.

The barrack and hospital accommodation, and the general sanitary condition of the cantonment, are reported to be excellent.

The canteen is in a room in the corner of a barrack.

The facilities for obtaining liquor are great, owing to the cantonment being in Holkar's territory, where there exists no order prohibiting the sale of liquor to European soldiers.

Neemuch.—This station has maintained its character for unhealthiness, and has this year been the most sickly of any military station in the Bombay command. The large sickness and mortality are attributable to fever and liver disease. Venereal affections prevailed in a large ratio.

Pending the provision of good barracks for a wing, a reduction of the infantry garrison to two companies was approved by the Government of India

The system of dry earth conservancy was not fully carried out, owing to the alterations in the buildings not having been completed.

The supply of potatoes failed on one occasion, and their quality was frequently very inferior. It was ordered that a supply of preserved potatoes should be kept for issue when necessary. There were eight admissions to hospital from scurvy.

Nuseerabad.—The health of the troops at this station was fair.

Fever afforded only an average number of cases.

There was much sickness from venereal disease. A lock hospital had been established, and the prostitutes who resided within the jurisdiction of the cantonment authorities were kept under surveillance. It is said that the disease was contracted by men cohabiting with women who lived beyond the cantonment limits.

Ophthalmia prevailed to a considerable extent, principally among the families of the infantry regiment, and is supposed to be caused by an ammoniacal atmosphere generated from the cavalry lines, which are close by the patcheries.

A bread-kneading machine was brought into use.

The same scarcity of potatoes as at Neemuch was felt, and similar arrangements were made to meet future wants. There were 14 admissions into hospital from scurvy.

An unsuccessful attempt was made to improve the water supply by sinking a well "in the barrack ground, below the level of the Dilwara well." Other wells had been sunk on the eastern side of the cantonment, but none of them yielded wholesome drinking water.

Ajmere.—The garrison, which consists of one company, was relieved monthly from Nuseerabad.

There was little sickness excepting from venereal disease, which afforded 18 out of a total of 61 cases of admission to hospital.

Little had been done to improve the bad barrack accommodation, as the construction of the buildings does not admit of openings being made in the walls. The use of punkhas and khuskhus tatties was sanctioned for the hot season. There is low marshy ground about a quarter of a mile east from the fort, which gives rise at times to noxious smells.

NORTHERN DIVISION.

Ahmedabad.—Fever, which, with the exception of venereal, was the only prevalent disease at this station, afforded less than the average ratio of cases. Again excepting venereal disease, the health statistics of 1866 compare very favourably with those of 1865.

The sanitary condition of the station is described as being excellent.

Means were wanted for the conservancy of the commissioned and warrant officers' compounds.

The accommodation for the troops had been much increased and improved.

The accommodation for hospital establishments was deficient.

A detailed report on the cantonment forms part of the Appendix.

Deesa.—Fever was nearly 10 per cent. less prevalent, and only half as fatal as in the previous year.

Much progress has been made in extending and improving the barrack and hospital accommodation.

The water from ablution rooms, instead of being conveyed to a distance by pipe, was allowed to soak into the ground in the immediate neighbourhood.

The work of making roads and bridging nullahs had been begun.

There was an occasional scarcity of vegetables, and six admissions to hospital were from scurvy.

Baroda.—The detachment of artillery at this station was very small, and was frequently relieved from Ahmedabad.

The sickness was small, and the mortality nil.

As the artillery bullock sheds were near the well, which afforded the best drinking water for the troops, steps were taken for their removal.

A report on the artillery lines will be found in the Appendix.

SIND DIVISION.

Kurachee.—The health of the troops at this station, as shown by the returns, was slightly inferior to that of the preceding year; but as compared with the generality of stations it was very satisfactory.

There were comparatively few admissions from fever.

Scurvy exhibited itself both in the artillery and infantry.

The bread is reported to have been inferior in quality.

Ophthalmia was prevalent in the infantry regiment, and led to its removal from the station.

The infantry barrack room doors were divided horizontally, so as to permit of the lower half only being shut; this was said to increase the comfort of the men, "who before complained of dust, and of the cold night air blowing on their faces." A diminution of admissions for ophthalmia is said to have ensued. The bad sanitary condition of the infantry officers' lines was on several occasions taken notice of.

A report on the station forms part of the Appendix.

Hydrabad.—The sickness in this station was not great, but the mortality was large, 30·3 per mille. The 2nd Queen's arrived from England in the last quarter of the year, and suffered severely from fever and bowel complaints. Two men of the regiment died. There was only one death in the artillery; the others occurred in the 109th Regiment, one being from suicide.

The bed-clothing is said to have been insufficient for the cold weather.

The hospital compound wall is thought to be too high, and there was an accumulation of refuse of some years' standing just outside it, and the sanitary condition of the vicinity was unsatisfactory. There is no covered passage between the hospital and the latrines.

The family quarters are very defective; there were instances of a family of five living in one room 16' × 17½' and 17½' high.

The manure yard is about two miles from the town, and its condition is stated to have been "horrible."

The water supply for the station of Hydrabad was the subject of a special report.

The period for which troops should serve at Hydrabad was considered, and it was thought that two years should be the limit, owing to the debilitating tendency of the climate.

BOMBAY BRIGADE.

Colaba.—The health of the troops at Colaba appears to have been excellent. Malarious fever and venereal disease, the two affections which, greatly above all others and at all stations, swell the sick list, prevailed in so small a degree as to be noteworthy.

The rate of mortality was high, the number of deaths being eight; one was from suicide, and three were from consumption.

Much pains were taken in the first portion of the year, by occupation of verandahs and a judicious distribution, to prevent overcrowding. Before the end of the year the construction of temporary barracks had been completed, and ample accommodation provided.

It is in contemplation to erect at Colaba double-storied barracks, designs for which have been prepared and have met with much consideration. Much property on the peninsula has been purchased by Government in view to carrying out a project for the formation of Colaba into a military cantonment, in which the whole garrison of Bombay may be located.

The nuisance occasioned by the foul foreshores had been abated by the provision of latrines for the civil inhabitants, and by better arrangements for the removal of the soil from the barrack latrines.

The best way of disposal of this soil came under discussion. One method proposed was to load it in boats and to discharge it at suitable times in the open sea. Questions of expense, of difficulties in the monsoon season, and of the likelihood of occasional carelessness in complying with the necessary provisions to ensure none of the soil being thrown back into the harbour or Back Bay, have,

at any rate, postponed the adoption of the proposal. It is now proposed to deodorise the soil with Macdougall's powder, and cart it to the municipality's filth dépôt at Chinch Bunder.

Khandalla.—No special report has been received from this station, which is occupied by troops only during portions of the year. There were four deaths, all which occurred in the first quarter of the year, in the 4th Regiment, two from liver disease, one from dysentery, and one from acute rheumatism.

It was contemplated to cease using the Khandalla barracks as a habitation for troops; however it was recommended that the barracks should be kept in repair for use in the case of crowding in the Poona barracks, or in the hot months, when accommodation was deficient at Poorundhur or Maunderdeo, or in the case of epidemic disease prevailing at Bombay.

ADEN BRIGADE.

Aden.—The health of the garrison seems to have been very good. There was a large decrease, as compared with the previous year, in admissions from fever, which prevailed in a less degree at Aden than at any other station in the Bombay Command. There were 16 cases of scurvy, but no death. The rations, both animal and vegetable, are stated to have been good and abundant.

In January some of the garrison was employed in an expedition into the interior, and again for several days in March. Every two months throughout the year a movement of troops was made between the cantonment proper and the Isthmus and Steamer Point. The soldiers were occasionally employed in public works. All these circumstances are said to have had a beneficial effect upon health.

The medical officer considers the dry conservancy system not adapted for Aden, where the soil is sand, and there is no cultivation. He fears that burying such filth in the earth may in future years be the cause of much unhealthiness, and proposes that it be thrown into the sea.

The question of sites for proposed new barracks has met with much consideration.

It was decided that the tour of duty at Aden should not be prolonged beyond two years, and that troops on coming to India from Aden should, when practicable, be located at a station in the Dukhun or the Southern Muratha country.

Sanction was accorded to the execution of a project for bringing water from the Shaik Othman wells in the interior, and the work was commenced. A large addition to, and an improvement of, the apparatus for the distillation and the æration of water had been arranged for.

BELGAUM BRIGADE.

Belgaum.—There was, as usual, comparative immunity from malarious fever among the troops at this station. Bowel affections were comparatively most prevalent and most fatal. The number of admissions for venereal disease approximated to 50 per cent., amounted in fact to within 50 of half the entire strength.

Belgaum is notorious for the prevalence of venereal disease among the troops, and it seems desirable that action should be taken with a view to mitigate the evil.

Cholera prevailed to a small extent in June; several of the artillery followers died from it.

One man of the 26th regiment was attacked in hospital and died; this was the only case that occurred among the soldiers.

There were 12 admissions from scurvy, and it is reported by the medical officer that a scorbutic taint manifested itself among the men of the 26th regiment in the end of the preceding year, and continued during the beginning of 1866, and was, in his opinion, caused by the long voyage from Europe. Some cases of the same disease occurred among the men of the artillery, which led to a correspondence regarding the supply of vegetables at the station. This resulted in an

order

order by Government that the troops should have a vegetable ration of eight ounces of potatoes, four ounces of green succulent vegetables of European sorts, and four ounces of good mixed country vegetables, without reference to cost. The opportunity was taken of representing that it was desirable that red pumpkin should be excluded from the schedule.

There was a large addition to the barrack accommodation at this station during the year.

SANATARIA.

Poorundhur.—The mean strength of effectives was only five, that of invalids and convalescents 104. There was but one death during the year, which occurred from dysentery.

There was a marked decrease in admissions from fever and diarrhoea, and a great increase from liver disease, as compared with the preceding year.

The liquor ration was restricted to malt, no spirit having been allowed on the hill; an arrangement which is said to have been of much benefit to health.

The men were engaged in public works, and earned from 8 to 12 annas per day; the work was found conducive to health.

In consequence of the range of temperature being so great during the cold weather, the medical officer is of opinion that the use of flannel shirts is essential to health.

The accommodation of the non-commissioned officers was very defective; and the earthen floors of the barracks are very objectionable.

The barracks required eaves' gutters and better conveniences for washing.

The apothecary's quarters, in process of construction, will afford totally inadequate accommodation.

An isolated hospital ward and latrines for Natives are urgently required.

Mount Aboo.—There was a large number of cases of fever, yet fewer than at any former period.

This is attributed to improvement of the surface drainage, and the medical officer urges the work of sub-soil drainage being undertaken.

The men were "occupied at their own desire upon the public works, with the very best effects upon their health."

A garden was much wanted.

Fireplaces were being constructed in the barrack rooms.

The cells were too damp to be used for a considerable portion of the year.

From the 10th of March to the 13th of June, a detachment was encamped on an elevated plateau, about one-fourth of a mile to the north-east of the barracks, and enjoyed good health.

Complaints were frequent regarding the bad quality of the bread.

Ghizree.—The question of the relative advantages of Ghizree and Munora, as regards a site for a sanitarium, came under consideration. It was represented that Munora had the advantage over Ghizree of "closer proximity to the sea, as the breeze coming so immediately from the water must be cooler than it would be after blowing over heated ground, and as sea bathing could be obtained in the stiller water of the harbour, and with less fatigue than at the former (Ghizree) station. Were the object in view to provide for only a few men, or merely for men requiring to be treated in hospital, Munora should have the preference, but as provision has to be made for a large body of invalids and convalescents who require out-door recreation and exercise, the narrow bounds set by the sea on three sides, and the loose sand and swampy ground on the north, give to this part too much the character of a prison. Taking all circumstances into consideration, Ghizree, which affords a wider range for recreation, should * * * be the site for the permanent barracks."

A number of cases of scurvy from the 95th Regiment, at Kurachee, were received at the sanitarium, which led to the vegetable ration being increased, and lime-juice and sugar being issued.

Teethul.—In April, May, and part of June, invalids from Ahmedabad were accommodated in tents. The strength was 23.

Water was procured from a well, and is reported to have been brackish.

Taraghur.—Invalids from Nuseerabad were accommodated during the hot season in a bomb-proof building, in which there were cots for 20 patients.

The detachment of troops at Ajmere had the advantage of a residence on the hill. A quarter of the number were accommodated in tents, and relieved weekly, so that each man had the benefit of the change during his tour of duty (a month) at Ajmere.

Drinking water was procured from a tank, which at the end of the year was being cleaned out, and having its margin cleared of vegetation.

TABLE I.—INCREASE and DECREASE among the BRITISH TROOPS serving in the BOMBAY PRESIDENCY during the Year 1866.

						Effectives.	Unattached List.	TOTAL.
Strength on 1st January 1866 - - - - -						12,268	356	12,624
INCREASE.								
						Effectives.	Unattached List.	TOTAL.
Recruited in India - - - - -						24	-	24
Drafted or Transferred from England or Colonies - - - - -						2,665	-	2,665
Transfers received - - - - -						278	-	* 278
Joined from Desertion - - - - -						6	-	6
TOTAL Increase - - -						2,978	-	2,978
* Exclusive of 16 men remanded from Unattached List.						15,241	356	15,597
DECREASE.								
Time-expired - - - - -						191	1	192
Sent to England as Invalids - - - - -						527	5	532
Discharged by Purchase - - - - -						18	2	20
" by Court Martial - - - - -						9	-	9
" otherwise - - - - -						63	5	68
Deserted - - - - -						34	-	34
Transfers given - - - - -						+167	-	167
Transferred on duty to England or Colonies - - - - -						-	-	-
Died - - - - -						149	12	161
Promoted to Honorary Commissions - - - - -						-	10	10
TOTAL Decrease - - -						1,158	35	1,193
† Exclusive of 49 men transferred to Unattached List.						14,083	321	14,404
REVERSIONS.								
Remanded from Unattached List to Effectives - - - - -						-	-	16
Transferred from Effectives to Unattached List - - - - -						-	-	49
Difference to be deducted from Effectives and added to Unattached List - - - - -						33	33	-
Strength on 1st January 1867 - - - - -						† 14,050	354	14,404

† Includes 6th Inniskilling Dragoons under orders to embark for England, and 103rd and 106th Regiments to be taken on the Bengal Establishment.

N.B.—The following information respecting Transfers is explanatory of the items shown under that head:—

RECEIVED.							
Transfers received from other Presidencies and from Cape of Good Hope						128	
" Locals volunteering for general service - - - - -							} 90
" between corps serving in the Presidency of Bombay - - - - -							
Received from 56th Foot and 6th Inniskilling Dragoons previous to embarkation of these corps to England - - - - -						60	
							278
GIVEN.							
Transfers to other Presidencies - - - - -						22	
" between corps in the Presidency - - - - -						81	
" granted commissions from the ranks - - - - -						1	
" given by 6th Inniskilling Dragoons - - - - -						63	
							167
INCREASE during the Year (Transfers) - - -							111

Poona, 1 January 1867.

TABLE II.—NUMBER of MARRIED and UNMARRIED EUROPEAN NON-COMMISSIONED OFFICERS and SOLDIERS serving in the BOMBAY PRESIDENCY on the 1st day of May 1866.

(From a Return given by the Adjutant General of the Army.)

				Staff Serjeants.			Serjeants.			Rank and File.			
				Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.		Establishment in India.	Actual Strength.		
					Married.	Unmarried.		Married.	Unmarried.		Married.	Unmarried.	
Corps.													
Royal Horse Artillery, E Brigade.	Head Quarters -	-	-	-	5	4	1	-	-	-	-	-	-
	A Battery -	-	-	-	2	1	1	6	5	1	137	10	106
	B Ditto -	-	-	-	2	1	1	6	4	2	137	6	100
	C Ditto -	-	-	-	2	2	-	6	3	3	137	11	104
	D Ditto -	-	-	-	2	-	2	6	3	3	137	10	106
14th Brigade	Head Quarters -	-	-	-	5	2	3	-	-	-	-	-	-
	D Battery -	-	-	-	2	2	-	6	3	3	137	7	137
	E Ditto -	-	-	-	2	1	1	6	3	3	137	12	112
	F Ditto -	-	-	-	2	2	-	6	1	5	137	6	133
	G Ditto -	-	-	-	2	1	1	6	-	6	137	2	140
Royal Artillery, 18th Brigade.	Head Quarters -	-	-	-	5	3	2	-	-	-	-	-	-
	A Battery -	-	-	-	2	2	-	6	2	4	137	13	111
	B Ditto -	-	-	-	2	2	-	6	4	1	137	14	116
	C Ditto -	-	-	-	2	2	-	6	4	2	137	20	119
	D Ditto -	-	-	-	2	1	1	6	2	4	137	14	123
	E Ditto -	-	-	-	2	1	1	6	5	1	137	13	117
	F Ditto -	-	-	-	2	2	-	6	1	5	137	8	119
21st Brigade	Head Quarters -	-	-	-	4	*5	-	-	-	-	-	-	-
	No. 1 Battery -	-	-	-	2	1	1	4	2	2	70	8	69
	" 2 Ditto -	-	-	-	1	1	-	4	1	3	70	7	58
	" 3 Ditto -	-	-	-	1	1	-	4	2	2	70	7	59
	" 4 Ditto -	-	-	-	1	1	-	4	2	2	70	11	54
	" 5 Ditto -	-	-	-	1	-	1	4	-	4	70	6	66
	" 6 Ditto -	-	-	-	1	1	-	4	1	3	70	11	49
TOTAL - - -				54	39	16	108	48	59	2,338	196	1,998	
Cavalry.													
Her Majesty's 3rd Dragoon Guards -				(a) 12	3	8	28	7	19	476	32	407	
Ditto - 6th Enniskilling Dragoons -				(a) 12	6	4	28	7	20	476	15	419	
				24	9	12	56	14	39	952	47	826	
Infantry.													
Her Majesty's 4th Regt. of Foot, 1st Battalion -				(b) 9	5	3	40	17	19	870	44	733	
Ditto - 26th - ditto -				(b) 9	5	3	40	25	16	870	75	715	
Ditto - 33rd - ditto -				(a) 10	9	-	40	15	23	870	64	806	
Ditto - 45th - ditto -				(a) 10	4	3	40	16	24	870	74	796	
Ditto - 49th - ditto -				(b) 9	6	2	40	26	13	870	71	711	
Ditto - 95th - ditto -				(a) 10	7	1	40	13	21	870	70	735	
Ditto - 96th - ditto -				(b) 9	4	1	40	17	16	870	29	549	
Ditto - 103rd Regt. of Fusiliers -				(b) 9	7	2	40	16	19	870	84	784	
Ditto - 106th ditto Light Infantry -				8	3	5	40	14	28	870	68	819	
Ditto - 109th - ditto - ditto -				8	4	2	40	13	26	870	50	744	
				91	54	22	400	172	205	8,700	629	7,392	
Her Majesty's Bombay Sappers and Miners -				2	-	2	4	3	4	8	4	2	
TOTAL - - -				171	102	52	568	237	307	11,998	876	10,218	

(1). The fixed Indian Establishment is given above.

* Includes the Hospital Serjeant.

Note.—The Regiments marked (a) have each a trained Schoolmaster and a Bandmaster on their establishment; these non-commissioned officers having been posted by the Secretary of State for War. Schoolmasters have been posted under the same authority to Regiments marked (b).

TEMPERANCE RETURN.

(Furnished by the Adjutant General of the Army.)

	Average Number during the Year.	Average Daily Sick.	Actual Number of Deaths.	Actual Number Attacked by Cholera.	Actual Number Died of Cholera.	Actual Number Invalided to England.	Actual Number sent to the Hills.	Cases Punished by Commanding Officer.	Cases Tried by Court Martial.	Character.				
										Good.	Indifferent.	Bad.	TOTAL.	
TABLE A.														
Total abstainers - - -	296.09	12.53	1	-	-	6	7	79	-	291.89	3.20	1.0	296.09	
Temperate - - - -	10893.27	486.09	114	4	3	383	353	6,722	511	10012.78	706.71	173.78	10893.27	
Intemperate - - - -	982.50	69.29	23	3	3	47	42	1,550	534	82.08	507.53	392.89	982.50	
TOTAL - - -	12171.86	565.91	138	7	6	436	402	8,351	1,045	10386.75	1217.44	567.67	12171.86	
TABLE B.														
Drinkers of Malt Liquor :														
Temperate - - -	2916.75	126.86	43	3	2	88	62	1,943	117	2721.09	160.42	35.24	2916.75	
Intemperate - - -	226.17	15.00	3	1	1	3	-	222	42	8.0	145.78	72.39	226.17	
TOTAL - - -	3142.92	141.86	46	4	3	91	62	2,165	159	2729.09	306.20	107.63	3142.92	
Drinkers of Spirits, or both Spirits and Malt Liquor :														
Temperate - - -	7976.52	359.23	71	1	1	295	291	4,779	394	7291.69	546.29	138.54	7976.52	
Intemperate - - -	756.33	54.29	20	2	2	44	42	1,328	492	74.08	361.75	320.50	756.33	
TOTAL - - -	8732.85	413.52	91	3	3	339	333	6,107	886	7365.77	908.04	459.04	8732.85	

III.—SICKNESS AND MORTALITY AMONG EUROPEAN TROOPS.

YEARS.	Mean Strength from Weekly Returns.	Admission into Hospital.	Daily Sick, from Hospital Diets.	Deaths in India.			Invalided to be Discharged.	Ratio to Strength per Mille.				
				In Hospital.	Out of Hospital.	TOTAL.		Admissions.	Daily Sick.	Deaths.		Invalided.
										In Hospital.	All Deaths.	
1865 - - - - -	11,898	18,089	671	402	16	418	176	1,520	56.4	33.8	35.1	14.8
1866 - - - - -	12,051	16,998	717	136	17	153	556	1,410	59.5	11.3	12.7	46.1

IV.—SICKNESS and MORTALITY from CLASSES of DISEASE.

		Zymotic.	Cachectic.	Local.	Developmental.	Violence.
Admissions - - - - -		11,411	315	3,889	137	1,246
Deaths - - - - -		58	23	45	-	27
<i>Per mille of Strength.</i>						
1866 - { Admission - - - - -		946.9	26.1	322.7	11.4	103.4
Deaths - - - - -		4.8	1.9	3.7	-	2.2
1865 - { Admissions - - - - -		1037.1	29.8	339.1	9.7	104.6
Deaths - - - - -		22.7	2.6	6.6	0.3	2.9

V.—SICKNESS and MORTALITY from ORDERS of DISEASES.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic disease - - - - -	8,464	53	702.3	4.4	49.8	0.3
Enthetic disease - - - - -	2,556	2	212.1	0.2	15.0	0.0
Dietic disease - - - - -	249	3	20.7	0.2	1.5	0.0
Parasitic disease - - - - -	142	-	11.8	-	0.8	-
Diathetic disease - - - - -	145	-	12.8	-	0.9	-
Phthisic disease - - - - -	170	23	14.1	1.9	1.0	0.1
Disease of nervous system - - - - -	423	9	35.1	0.7	2.5	0.1
" circulatory system - - - - -	137	5	11.4	0.4	0.8	0.0
" respiratory system - - - - -	562	7	46.6	0.6	3.3	0.0
" digestive system - - - - -	1,304	21	108.2	1.7	7.7	0.1
" urinary system - - - - -	37	3	3.1	0.2	0.2	0.0
" reproductive system - - - - -	233	-	19.3	-	1.4	-
" locomotive system - - - - -	68	-	5.6	-	0.4	-
" tegumentary system - - - - -	1,125	-	93.3	-	6.6	-
Atrophic - - - - -	137	-	11.4	-	0.8	-
Violence, accidental - - - - -	1,215	24	100.8	2.0	7.1	0.1
Battle - - - - -	-	-	-	-	-	-
Homicide - - - - -	-	-	-	-	-	-
Suicide - - - - -	-	2	-	0.2	0.0	0.0
Punishment - - - - -	31	1	2.6	0.1	0.2	0.0
Unspecified - - - - -	-	-	-	-	-	-

VI.—SICKNESS and MORTALITY from VARIOUS DISEASES.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of Each to All, per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - - - -	8	7	0.7	0.6	0.0	0.0
Small-pox - - - - -	-	-	-	-	-	-
Measles - - - - -	1	1	0.1	0.1	0.0	0.0
Dysentery - - - - -	309	12	25.6	1.0	1.8	0.1
Diarrhœa - - - - -	1,146	4	95.1	0.3	6.7	0.0
Fever, remittent and intermittent - - - - -	4,207	12	349.1	1.0	24.7	0.1
" of other type - - - - -	1,102	14	91.4	1.2	6.5	0.1
Scorbutus and purpura - - - - -	60	-	5.0	-	0.4	-
Delirium tremens - - - - -	19	1	1.6	0.1	0.1	0.0
Ebrietas - - - - -	170	2	14.1	0.2	1.0	0.0
Hydatid - - - - -	-	-	-	-	-	-
Verues - - - - -	4	-	0.3	-	0.0	-
Phthisis pulmonalis - - - - -	149	23	12.4	1.9	0.9	0.1
Hepatitis - - - - -	518	17	43.0	1.4	3.0	0.1
Icterus - - - - -	64	-	5.3	-	0.4	-
Spleen disease - - - - -	38	-	3.2	-	0.2	-
All other causes - - - - -	9,203	60	763.6	5.0	54.1	0.4

VII.—POONA DIVISION.

			All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
DIVISION - - - - - (Mean strength, 3,845. Daily sick, 228.)	Admissions - - -	-	6,044	8	2,009	97	516	96	31	231	9	693
	Deaths - - -	-	47	7	9	2	4	3	6	4	-	-
	Ratio per mille.											
	Admissions - - -	-	1571.9	2.1	522.5	25.2	134.2	25.0	8.8	60.1	2.3	180.2
	Deaths - - -	-	12.2	1.8	2.3	0.5	1.8	0.8	1.6	1.8	-	-
KIRKEE - - - - - (Mean strength, 468. Daily sick, 38.)	Admissions - - -	-	848	1	248	10	49	13	1	40	2	105
	Deaths - - -	-	5	1	1	-	-	1	1	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1812.0	2.1	529.9	21.4	104.7	27.8	2.1	85.5	4.3	224.4
	Deaths - - -	-	10.7	2.2	2.1	-	-	2.1	2.1	-	-	-
POONA - - - - - (Mean strength, 2,210. Daily sick, 137.)	Admissions - - -	-	3,809	7	1,490	73	346	65	25	143	4	383
	Deaths - - -	-	33	6	8	1	2	2	5	4	-	-
	Ratio per mille.											
	Admissions - - -	-	1723.5	3.2	674.2	33.0	156.6	29.4	11.3	64.7	1.8	173.3
	Deaths - - -	-	14.9	2.7	3.6	0.4	0.9	0.9	2.3	1.8	-	-
MAUNDERDEO - - - - - (Mean strength, 175. Daily sick, 5.)	Admissions - - -	-	126	-	12	1	9	2	-	4	-	17
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	720.0	-	68.6	5.7	51.4	11.4	-	22.9	-	97.1
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
POORUNDHUR - - - - - (Mean strength, 5. Daily sick, 0.)	Admissions - - -	-	5	-	2	-	-	1	-	-	-	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1000.0	-	400.0	-	-	200.0	-	-	-	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
SATARA - - - - - (Mean strength, 227. Daily sick, 9.)	Admissions - - -	-	281	-	97	3	26	7	3	7	-	38
	Deaths - - -	-	1	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1237.9	-	427.3	13.2	114.5	30.8	13.2	30.8	-	167.4
	Deaths - - -	-	4.4	-	-	-	-	-	-	-	-	-
SHOLAPOOR - - - - - (Mean strength, 132. Daily sick, 6.)	Admissions - - -	-	192	-	40	1	6	2	-	18	-	15
	Deaths - - -	-	1	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1453.0	-	303.8	7.6	45.5	15.2	-	135.3	-	113.6
	Deaths - - -	-	7.6	-	-	-	-	-	-	-	-	-
AHMEDNUGUR - - - - - (Mean strength, 530. Daily sick, 30.)	Admissions - - -	-	683	-	70	8	73	6	5	19	3	129
	Deaths - - -	-	6	-	-	-	2	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1288.7	-	132.1	15.1	137.7	11.3	9.1	25.8	5.7	243.4
	Deaths - - -	-	11.3	-	-	-	3.8	-	-	-	-	-
ASEERGHUR - - - - - (Mean strength, 98. Daily sick, 3.)	Admissions - - -	-	100	-	50	1	7	-	-	-	-	6
	Deaths - - -	-	1	-	-	1	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1020.4	-	510.2	10.2	71.4	-	-	-	-	61.2
	Deaths - - -	-	10.2	-	-	10.2	-	-	-	-	-	-

REPORT OF THE

VIII.—MHOW DIVISION.

[illegible]

IX.—NORTHERN DIVISION.

[illegible]

IX.—NORTHERN DIVISION—continued.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Euthetic Disease.
MOUNT ABOO (Mean Strength, 118. Daily Sick, 5.)	Admissions - -	203	-	88	4	11	-	8	4	-	16
	Deaths - - -	2	-	1	-	-	-	-	-	-	1
	<i>Ratio per mille.</i>										
	Admissions - -	1,720.3	-	745.8	33.9	93.2	-	67.8	33.9	-	135.6
	Deaths - - -	16.9	-	8.5	-	-	-	-	-	-	8.5
DEESA (Mean Strength, 812. Daily Sick, 46.)	Admissions - -	1,140	-	513	3	61	6	12	8	-	161
	Deaths - - -	11	-	3	-	-	-	2	1	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	1,404.1	-	631.8	3.7	75.1	7.4	14.8	9.8	-	198.2
	Deaths - - -	13.5	-	3.7	-	-	-	2.5	1.2	-	-
AHMEDABAD (Mean Strength, 257. Daily Sick, 54.)	Admissions - -	403	-	78	8	15	3	2	12	1	52
	Deaths - - -	2	-	1	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	1,568.1	-	303.5	31.1	58.4	11.7	7.8	46.7	3.9	202.3
	Deaths - - -	7.8	-	3.9	-	-	-	-	-	-	-
BARODA (Mean Strength, 24. Daily Sick, 1.)	Admissions - -	20	-	7	-	-	-	-	1	-	1
	Deaths - - -	-	-	-	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	833.3	-	291.7	-	-	-	-	41.7	-	41.7
	Deaths - - -	-	-	-	-	-	-	-	-	-	-

X.—SIND DIVISION.

DIVISION (Mean Strength, 1,365. Daily Sick, 65.)	Admissions - -	1,401	-	361	20	55	36	13	44	1	228
	Deaths - - -	15	-	1	1	-	-	1	1	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	1,026.4	-	264.5	14.7	40.3	26.4	9.5	32.2	0.7	167.0
	Deaths - - -	11.0	-	0.7	0.7	-	-	0.7	0.7	-	-
KURACHEE (Mean Strength, 969. Daily Sick, 55.)	Admissions - -	1,060	-	282	17	34	26	10	37	1	185
	Deaths - - -	3	-	-	-	-	-	1	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	1,093.9	-	291.0	17.5	35.1	26.8	10.3	38.2	1.0	190.9
	Deaths - - -	3.1	-	-	-	-	-	1.0	-	-	-
HYDERABAD (Mean Strength, 396. Daily Sick, 10.)	Admissions - -	341	-	79	3	21	10	3	7	-	43
	Deaths - - -	12	-	1	1	-	-	-	1	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	861.1	-	199.5	7.6	53.0	25.3	7.6	17.7	-	108.6
	Deaths - - -	0.3	-	2.5	2.5	-	-	-	2.5	-	-

REPORT OF THE

XI.—BOMBAY BRIGADE.

[illegible]

XII.—BELGAUM BRIGADE.

BELGAUM - - - - - (Mean Strength, 1,027. Daily Sick, 71.)	Admissions	-	-	1,235	-	190	51	127	12	5	22	-	461
	Deaths	-	-	10	-	1	2	-	-	-	2	-	-
	<i>Ratio per mille.</i>												
	Admissions	-	-	1,202.5	-	178.9	49.7	123.7	11.7	4.9	21.4	-	448.9
	Deaths	-	-	9.2	-	1.0	1.9	-	-	-	1.9	-	-

XIII.—ADEN BRIGADE.

[illegible]

XIV.—INVALIDS and CONVALESCENTS AT SANITARIA and DEPÔTS.

		All Classes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
TOTAL INVALIDS AND CONVALESCENTS (Mean strength, 327. Daily sick, 62.)	Admissions - - -	862	-	156	16	29	17	58	78	1	105
	Deaths - - -	16	-	-	4	-	-	6	2	-	-
	Ratio per mille.										
	Admissions - - -	2,636.1	-	477.1	48.9	88.7	52.0	177.4	238.5	3.0	321.1
OLABA (Mean strength, 29. Daily sick, 12.)	Deaths - - -	48.9	-	-	12.2	-	-	18.3	6.1	-	-
	Ratio per mille.										
	Admissions - - -	173	-	19	9	10	4	14	18	-	23
	Deaths - - -	4	-	-	-	-	-	3	-	-	-
POONA (Mean strength, 46. Daily sick, 8.)	Ratio per mille.										
	Admissions - - -	5,965.5	-	655.2	310.3	344.8	137.9	282.7	620.7	-	793.1
	Deaths - - -	137.9	-	-	-	-	-	103.4	-	-	-
	Ratio per mille.										
POORUNDHUR (Mean strength, 104. Daily sick, 12.)	Admissions - - -	160	-	22	1	-	-	0	17	-	21
	Deaths - - -	5	-	-	2	-	-	1	2	-	-
	Ratio per mille.										
	Admissions - - -	3,478.3	-	478.3	21.7	-	-	434.8	369.6	-	456.5
KHANDALLA (Mean strength, 7. Daily sick, 0.)	Deaths - - -	108.7	-	-	43.5	-	-	21.7	43.5	-	-
	Ratio per mille.										
	Admissions - - -	267	-	76	2	8	-	3	25	-	30
	Deaths - - -	1	-	-	1	-	-	-	-	-	-
SULABUT KHAN'S TOMB (Mean strength, 14. Daily sick, 0.)	Ratio per mille.										
	Admissions - - -	2,567.3	-	429.9	19.2	76.9	-	28.8	240.4	-	288.5
	Deaths - - -	9.6	-	-	9.6	-	-	-	-	-	-
	Ratio per mille.										
MOUNT ABOO (Mean strength, 23. Daily sick, 3.)	Admissions - - -	21	-	2	-	4	-	-	1	-	1
	Deaths - - -	1	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - - -	3,000.0	-	285.7	-	571.4	-	-	142.9	-	142.9
KURACHEE (Mean strength, 6. Daily sick, 1.)	Deaths - - -	142.9	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - - -	-	-	-	-	-	-	-	-	-	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-
GHIZREE (Mean strength, 74. Daily sick, 17.)	Ratio per mille.										
	Admissions - - -	44	-	9	-	2	-	2	4	-	5
	Deaths - - -	1	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
GHIZREE (Mean strength, 74. Daily sick, 17.)	Admissions - - -	1,913.0	-	391.3	-	86.9	-	86.9	173.9	-	217.4
	Deaths - - -	43.5	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - - -	15	-	12	-	-	1	2	-	-	-
GHIZREE (Mean strength, 74. Daily sick, 17.)	Deaths - - -	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - - -	2,500.0	-	2,000.0	-	-	166.7	333.3	-	-	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-
GHIZREE (Mean strength, 74. Daily sick, 17.)	Ratio per mille.										
	Admissions - - -	112	-	5	2	3	12	14	7	-	10
	Deaths - - -	3	-	-	-	-	-	2	-	-	-
	Ratio per mille.										
GHIZREE (Mean strength, 74. Daily sick, 17.)	Admissions - - -	1,513.5	-	67.5	27.0	40.5	162.2	189.2	94.6	-	135.1
	Deaths - - -	40.5	-	-	-	-	-	27.0	-	-	-
	Ratio per mille.										
	Admissions - - -	-	-	-	-	-	-	-	-	-	-

XIV.—INVALIDS and CONVALESCENTS at SANITARIA and DEPÔTS—*continued.*

			All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
TEETHUL - - - - - (Mean Strength, 7. Daily Sick, 1.)	Admissions - - -	25	-	3	1	-	-	-	1	2	-	2
	Deaths - - -	1	-	-	1	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>											
	Admissions - - -	3,571.4	-	428.6	142.8	-	-	-	142.8	285.7	-	285.7
TARAGHUR - - - - - (Mean Strength, 17. Daily Sick, 8.)	Deaths - - -	142.8	-	-	142.8	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>											
	Admissions - - -	45	-	8	1	2	-	-	2	4	1	13
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>											
	Admissions - - -	2,647.1	-	470.6	58.8	117.6	-	-	117.6	235.3	58.8	764.7
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-

XV.—EFFECTIVES MARCHING.

(Mean Strength, 264. Daily Sick, 6.)	Admissions - - -	243	-	69	9	15	1	3	3	-	25
	Deaths - - -	3	-	1	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - - -	920.5	-	261.4	34.1	56.8	3.4	11.4	11.4	-	94.7
	Deaths - - -	11.4	-	3.4	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - - -	541.7	-	83.4	-	41.7	-	83.3	41.7	-	41.7
	Deaths - - -	125.0	-	41.7	-	-	-	83.3	-	-	-

XVI.—INVALIDS and CONVALESCENTS MARCHING.

(Mean Strength, 24. Daily Sick, 4.)	Admissions - - -	13	-	2	-	1	-	2	1	-	1
	Deaths - - -	3	-	1	-	-	-	2	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - - -	541.7	-	83.4	-	41.7	-	83.3	41.7	-	41.7
	Deaths - - -	125.0	-	41.7	-	-	-	83.3	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - - -	541.7	-	83.4	-	41.7	-	83.3	41.7	-	41.7
	Deaths - - -	125.0	-	41.7	-	-	-	83.3	-	-	-

XVII.—STATIONS, arranged in Order of the highest RATIOS of SICKNESS and MORTALITY among the TROOPS during the Year 1866.

Average Strength.	SICKNESS.		Average Strength.	MORTALITY.	
	Name.	Per Mille.		Name.	Per Mille.
288	Neemuch - - - - -	2,135.4	65	Khandalla - - - - -	61.5
468	Kirkee - - - - -	1,812.0	396	Hydrabad - - - - -	30.3
2,210	Poona - - - - -	1,723.5	437	Bombay - - - - -	18.3
118	Mount Aboo - - - - -	1,720.3	288	Neemuch - - - - -	17.3
65	Khandalla - - - - -	1,661.5	118	Mount Aboo - - - - -	16.9
1,415	Mhow - - - - -	1,590.1	2,210	Poona - - - - -	14.9
257	Ahmedabad - - - - -	1,568.1	668	Aden - - - - -	14.9
132	Sholapore - - - - -	1,454.5	812	Deesa - - - - -	13.5
812	Deesa - - - - -	1,403.9	530	Ahmednugur - - - - -	11.3
967	Nuseerabad - - - - -	1,350.5	468	Kirkee - - - - -	10.7
530	Ahmednugur - - - - -	1,288.7	98	Aseerghur - - - - -	10.2
227	Sattara - - - - -	1,237.8	1,027	Belgaum - - - - -	9.7
1,027	Belgaum - - - - -	1,202.5	1,415	Mhow - - - - -	7.8
54	Ajmere - - - - -	1,129.6	257	Ahmedabad - - - - -	7.8
969	Kurachee - - - - -	1,093.9	132	Sholapore - - - - -	7.6
86	Indore - - - - -	1,046.3	967	Nuseerabad - - - - -	6.2
98	Aseerghur - - - - -	1,020.4	227	Sattara - - - - -	4.4
5	Poorundhur - - - - -	1,000.0	969	Kurachee - - - - -	3.1
668	Aden - - - - -	917.7			
437	Bombay - - - - -	881.0			
396	Hydrabad - - - - -	861.1			
24	Baroda - - - - -	833.3			
6	Field Force - - - - -	833.3			
2	Dhooliakote - - - - -	500.0			
175	Maunderdeo - - - - -	72.0			

NATIVE TROOPS.

LINES.

It was brought to the notice of Government that the want of drainage in the lines of Native regiments was a source not only of much discomfort, but of unwholesomeness, and an order of Government directed that estimates for the work, as recommended, should be submitted. Drainage.

LATRINES.

As the habits of Natives are not consistent with the adoption of the system of dry-earth conservancy, a modification of Macfarlane's patent water latrine was proposed, for use by natives, and Government procured from England several such latrines, which have been allocated to the Marine Battalion lines, Bombay, and the Sudur Bazaar, Poona. It is believed that as yet these latrines are not in use. Design.

A standard plan of latrine for Natives, modified from the one issued by the Quartermaster General, was prepared. Standard plan.

The want of latrine accommodation for Native regiments has in some places been supplied, and there is a prospect of it being so in all. Accommodation.

HOSPITALS.

Principles to be followed in the construction of Native hospitals have been published by the Government of India for guidance. (Appendix.) Construction.

The provision of houses for the Native establishments of the hospitals of Native troops has been sanctioned, and a standard plan has been issued. Hospital servants.

STATISTICAL.

The strength of the Native Army on the 1st day of January 1867 was 25,536, being an increase of four men on the number of the 1st January 1866. After deducting the 633 men removed from the influences affecting military life by causes other than those pertaining to health, a mortality of 8·8 and invaliding to the extent of 34·4 per thousand men are exhibited. Increase and decrease.

The numbers invalided convey no information regarding the effects of service in the Army upon health, as they are probably mostly made up of men worn out by age.

The hospital returns, which deal only with men actually present with their regiments, show that about 37 in every thousand were constantly sick, and that 13 in every two thousand men died. Sickness and mortality.

There was little sickness from epidemic disease. Malarious fever was the cause of nearly half of the entire sickness, and a quarter of the entire mortality. Bowel affections were next most prevalent and fatal, but in a much smaller ratio. There were 21 cases of, and one death from, small-pox.

Poona.—Fever and dysentery prevailed to a considerable extent, but the mortality was very small.

Scarcity of water for the cavalry regiment is still felt at certain seasons, and the situation of the lines “to leeward of a nulla, and close to a half-dry river bed below a large city,” is unfavourable to health.

A wing of the 7th regiment left the station for Aden in the end of October. The duty is reported to have been heavy in the 10th Regiment. The admissions from guinea-worm in it were less by one-half than in the preceding year. The 22nd Regiment suffered severely from fever in June and October. Water is now conveyed to the neighbourhood of the 22nd Regiment's lines by iron piping.

The latrine conservancy was not satisfactory.

Sholapore.—A relief of the infantry regiment took place in November from Bombay.

A few cases of cholera occurred, but the general health was good.

New lines were in progress of building on a site "at a much greater distance from the Sudur Bazaar than the present ones, which are situated almost in the bazaar." It is stated that "dry conservancy is the system employed."

Seroor.—The average strength of the troops was considerably less than in the preceding year. The general health was "excellent." There was no death.

Ahmednugur.—A relief of the regiment was effected from Rajkote.

Some cases of small-pox occurred in the lines of the 14th Regiment in December. The general health of the troops was satisfactory.

Malligaum.—There was a large decrease in sickness in all classes of disease as compared with the previous year. The men were in occupation of the lines recently built, which are well drained. The conservancy of the lines and of the station was carefully looked after.

Aseerghur.—There was a slight increase in sickness from fever as compared with the preceding year. There was no death.

The pendalls are reported to be "in a most dangerous state." In the monsoon one fell down, and 50 to 60 men were accommodated "within the precincts of the gaol."

The latrine arrangements and conveniences were not satisfactory, as the filth was thrown upon the "ramparts and cliffs," and "the most flagrant nuisances" existed. The hospital accommodation was unsuitable and inadequate. During the cleaning of the tank of silt the detachment was encamped at a distance for about a month in the cold weather. The European burial-ground is close to the lines and the tank, and it should be entirely closed, as a new cemetery is available.

Dhoolia.—The men were in occupation of new lines, and enjoyed excellent health. The sickness was less by more than one-third that of the previous year.

Manderdeo.—The Sappers and Miners, who were employed at this station during the first four months of the year, suffered in a large proportion from fever, especially in January. No death occurred.

Mhow.—The two Native Infantry regiments gave a detachment of 200 men to Indore, each for six months at a time. Considerable progress was made in the construction of new lines, but the work was necessarily slow owing to the detachment duty. There was a considerable increase of sickness from fever as compared with the previous year, but the mortality was much less.

Indore.—The lines were in very bad repair. The garrison consisted of 200 men detached from the regiments at Mhow, and was relieved after six months. The sickness was greater than in the preceding year, which is attributed to the debilitated state of the 15th Regiment after service in Aden. No improvement has taken place in the hospital accommodation.

Augur.—No special report has been received from this station. The sickness from fever was much greater than in the preceding year.

The garrison was relieved from Mehidpoor in March.

Mehidpoor.—There was a very high ratio of sickness from fever. The mortality was nil.

Moving the cantonment to a more eligible locality was in contemplation.

Neemuch.—The infantry regiment was relieved from Mehidpoor in December.

The statistical returns indicate an amount of sickness much the same as in the preceding year. The death rate was very small, and the senior medical officer has reported that "the past has been the most healthy year I have known during a residence of four years." The cavalry regiment had been upwards of nine years at the station, and "during the past year has been remarkably healthy."

Nuseerabad.—There was greater sickness than in the preceding year, principally from the prevalence of fever. There were only two cases of scurvy, and the mortality was very small. One fatal case of cholera occurred.

Surat.

Surat.—The ratio of sickness at this station was very high, more than double that of the preceding year, fever being the most, and bowel affections the second most prevalent disease. The mortality was not above the average.

During the first half of the year, the men were employed in building lines, which is reported to have "told unfavourably on the health."

The regimental bazaar had been removed from the heart of the cantonment, and "the villages on the river bank between the Taptee and the lines are in course of removal." The ground between the hospital and lines was "rough and broken."

Broach.—The detachment at this station was small, and withdrawn altogether in November. The amount of sickness was large, and in excess of that in the preceding year.

Baroda.—A relief from Tanna and Kolapoor was effected in October and December.

The general health of the troops at the station was very good; the admissions from fever were much below the average. The lines are stated to be old, and cultivation is carried on close to them. In rear there is a brick-kiln where, all sorts of rubbish and filth are collected and burned. "Dry conservancy has been introduced (at the hospital) and answers the purpose well."

Ahmedabad.—One regiment arrived from Nuseerabad in January, and another left the station in November.

The general health of the troops was not so good as in the preceding year. Fever was much more prevalent. "Cholera appeared during the hot weather in a mild degree, and chiefly among the followers and bazaar people." One case occurred in a man of the 17th Regiment, and one death was occasioned by accident.

Deesa.—The Infantry regiment arrived from Ahmedabad early in the year. The general health of the troops was excellent. The health of the men of the Cavalry Regiment contrasted unfavourably with that of the men of the Infantry.

Rajkote.—The cavalry and infantry were relieved from Deesa and Bhooj in October, November, and December. Fever was very prevalent at the station, and the mortality was larger. There were two cases of cholera and twelve of scurvy.

Porebunder.—The small detachment at this post during September, October, and November seems to have suffered enormously from fever, and also in a considerable degree from bowel affections. There was no death. No special report has been received.

Dwarka.—Seven admissions and one death from scurvy occurred, and there existed a general scorbutic taint in the regiment, otherwise the health was satisfactory. Vegetables were very scarce; limejuice and *kokum* were issued to the men. New lines have been built which afford accommodation for a portion of the troops, the rest being comfortably lodged in a dhurmsala, and huts of temporary construction.

A new hospital with subsidiary buildings was provided.

In the latrine "the dry-earth system is carried out in its integrity, and with the most satisfactory result."

Bhooj.—A wing of the regiment left the station in October, and the other wing was relieved from Baroda in the end of December. There was much sickness, and two deaths from fever. The men of the relieved regiment are reported to have been much debilitated, as exemplified by the large numbers who fell out on the march. This is said to be attributable in a measure to the regiment not having had the benefit of the usual sojourn at Mandavee during the months of September and October. The relieving regiment arrived in a sickly condition, after a tedious march through a country badly supplied with water, but quickly recovered on obtaining rest.

Burda Chowkee.—No special report has been received, but the returns show that the detachment had been very sickly. The admissions from fever alone had been nearly six times the average strength, and bowel affections were likewise prevalent.

There were five cases of cholera, of which four proved fatal.

In September, October, and November the detachment was at Porebunder.

Kurachee.—Fever was more prevalent than in the previous year, but considerably below the average; and the health of the regiment was generally very satisfactory. There was one case of cholera.

It was thought that the cesspits in the lines had been abolished, but it was discovered at the very end of the year that they still existed, and that the only openings from them were in the interior of the huts.

A case of "typhus fever" was admitted into hospital from one of these huts. There was no provision for drainage of the lines.

The latrines were very obnoxious; the liquid from the adjoining cesspools was used for cleansing (?) purposes. A special report is printed in the Appendix.

Hyderabad.—The health of the Native troops was excellent. Fever prevailed in a comparatively small ratio. "Immediately beneath and to the south-west of the fort is a large pond of water, which might more properly be described as an open cesspool." Insufficient water-supply is one of the greatest sanitary evils connected with the station.

Jacobabad.—The proportion of sickness was very high—much greater than in the preceding year. Fever prevailed to an extent double the average ratio. The mortality too was above the average. The 1st Regiment of Sind Horse has for long been much more sickly than any of the others. The medical officer thinks this is probably owing to the greater number of old men in it. The men on out-post duty were accommodated in tents or huts.

Bombay.—One regiment was relieved from Sholapoor in November; detachments from two other regiments formed part of the garrison for short periods of the year.

The proportion of sickness from all diseases was considerably less than that of the preceding year. The mortality was more than double the average; there were 13 deaths from fever, and two from scurvy, which prevailed to a large extent.

The conservancy of the Marine Battalion lines had undergone much improvement; and considerable alterations, which had been recommended by the Commission, and would "greatly improve the condition of the men," were in progress at the end of the year. The work of reclamation in Back Bay had been carried on without regard to the existing drainage system, which resulted in causing intolerable nuisance in the neighbourhood; steps were taken to remedy this.

The foul shore near Boree Bunder, and the nuisance occasioned in the Native Infantry lines there from the loading of railway trucks with the town sweepings at a platform close to the lines, were subjects of complaint; and it was represented to Government that the location of the Native Infantry both in the Marine and Boree Bunder lines was most unwholesome.

Tanna.—The troops were relieved from Bombay and Malligaum in October. The general health was very good. Bowel affections prevailed in a high ratio, as they did also in the preceding year. A few cases of cholera occurred among the families of the men in August.

Latrines had been erected, but were not used, owing to want of a conservancy establishment. No change had been made in the lines.

The subject of a site for new lines was reported on.

Kolhapoor.—No special report has been received. The regiment was relieved at the end of the year from Ahmedabad. The general health was very satisfactory.

Kulludghee.—No special report has been received. There was no death, and the general health was excellent.

Belgaum.—One regiment was relieved in the end of the year from Aden. The general health was good; the number of cases of fever was slightly under the average. Bowel affections prevailed above the average.

The lines of one of the Native regiments were in a very dilapidated state, and new ones were about to be built.

Hospital wards for infectious diseases are reported to be much required.

Dharwar.—

Dharwar.—The general health was excellent. There were five deaths, one of which was from cholera.

The lines are too near the town, and the floors of the huts are damp, owing, it is said, to the sites being excavated. A scarcity of water and of good grain at one time existed, and was greatly felt towards the end of the hot season. There were nine cases of scurvy.

Aden.—The regiment was relieved from Poona in November. The sickness throughout the year was comparatively small; there were only 24 cases of scurvy; 119 was the number in the preceding year in an average strength of nine fewer men. No mention is made in the medical officer's report of the *kokum* ration ordered for the troops at Aden in the end of 1865. The ratio of mortality was high. It was stated, in reply to a reference on the point, that it was highly advisable that the tour of duty at Aden should be reduced from three to two years, and that on return to India the regiment should be sent to a station in the Dukhun or the southern Muratha country, Bombay not being suitable owing to the dearness of provisions, and the Rajpootana, Khandeish, Kutch, Katiwar, the more inland of the Northern Division, and the Sind stations, owing to scarcity of vegetables and fruit.

A representation was made regarding delay in the transfer of sick native soldiers to India, when such change is considered essential to their recovery.

There is reason to believe that on board some steamers due provision is not made for the comfort of sick native soldiers. One case came casually to notice where the individual crawled out of the way into a compartment of a sheep-pen, in which he was separated from the animals in another compartment of the pen only by iron bars. This man died before the termination of the voyage.

Perim.—No special report has been received. There was only one death. The sickness was considerably less than in the preceding year, yet was large. There were 19 admissions from bowel affections and 26 from scurvy in an average strength of 66. It is presumed that the detachment was relieved every two months from Aden, as in the previous year.

XVIII.—STATEMENT showing the Increase and Decrease in the Native Army from 1 January to 31 December 1866.

Poona, 1 January 1867.

Strength on 1 January 1866	-	-	-	-	-	-	25,532
Increase.							
By recruiting	-	-	-	-	-	1,711	
„ Boys taken on effective strength	-	-	-	-	-	82	
							1,793
TOTAL							27,325
Decrease.							
By Deaths	-	-	-	-	-	236	
„ Invaliding	-	-	-	-	-	920	
„ Summary dismissal and desertion	-	-	-	-	-	633	
							1,789
Strength on 1 January 1867	-	-	-	-	-	-	* 25,536
Artillery	-	-	-	-	-	-	259
Artillery Store Lascars	-	-	-	-	-	-	262
Sappers and Miners	-	-	-	-	-	-	565
Staff and guides attached to Sind horse	-	-	-	-	-	-	315
Cavalry	-	-	-	-	-	-	3,555
Infantry	-	-	-	-	-	-	20,580
							* 25,536

XIX.—SICKNESS AND MORTALITY AMONG NATIVE TROOPS.

Year.	Mean Strength from Monthly Returns.	Admissions into Hospital.	Daily Sick.	Deaths in Hospital.	Invalided to be Discharged.	Ratio to Strength per Mil a.			
						Admissions.	Daily Sick.	Deaths in Hospital.	Invalided.
1866 - - -	24,451	28,769	902·6	162	-	1,176·6	36·9	6·6	—

XX.—SICKNESS AND MORTALITY FROM CLASSES OF DISEASE.

	Zymotic.	Cachectic.	Local.	Developmental.	Violence.
Admissions - - - - -	20,802	127	4,775	34	3,031
Deaths - - - - -	83	10	60	5	4
<i>Ratio per mille.</i>					
Admissions - - - - -	850·8	5·2	195·3	1·4	12·4
Deaths - - - - -	3·4	·4	2·5	·2	·2

XXI.—SICKNESS AND MORTALITY FROM ORDERS OF DISEASE.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Miasmatic Disease - - - - -	19,267	77	788	3·1	67	47·5
Euthetic - - - - -	659	—	2·7	—	2·3	—
Dietetic - - - - -	231	6	9·4	·2	0·8	3·7
Parasitic - - - - -	645	—	26·4	—	2·2	—
Diathetic - - - - -	90	4	3·7	·2	0·3	2·5
Phthisic - - - - -	37	6	1·5	·2	0·1	3·7
Disease of Nervous System - - - - -	509	4	20·8	·2	1·8	2·5
" Circulatory - - - - -	23	7	·9	·3	0·1	4·3
" Respiratory - - - - -	499	27	20·4	1·1	1·7	16·7
" Digestive - - - - -	1,201	21	49·1	·9	4·2	13·0
" Urinary - - - - -	26	—	1·1	—	0·1	—
" Reproductive - - - - -	109	—	4·5	—	0·4	—
" Locomotive - - - - -	34	—	1·4	—	0·1	—
" Tegumentary - - - - -	2,374	1	97·1	—	8·3	0·6
Atrophic - - - - -	34	5	1·4	·2	0·1	3·1
Violence Accidental - - - - -	3,019	4	123·5	·2	10·5	2·5
Battle - - - - -	—	—	—	—	—	—
Homicide - - - - -	2	—	·1	—	—	—
Suicide - - - - -	1	—	—	—	—	—
Punishment - - - - -	9	—	·4	—	—	—

XXII.—SICKNESS AND MORTALITY FROM VARIOUS DISEASE.

	Admissions.	Deaths.	Per Mille of Strength.		Ratio of each to all per Cent.	
			Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - - - -	16	9	·7	·4	0·1	5·6
Small-pox - - - - -	21	1	·9	—	0·1	0·6
Measles - - - - -	29	—	1·2	—	0·1	—
Dysentery - - - - -	501	10	20·5	·4	1·7	6·2
Diarrhoea - - - - -	735	6	30·1	·2	2·6	3·7
Fever, remittent and intermittent - - - - -	13,594	39	55·6	1·2	47·3	24·1
Fever of other type - - - - -	1,229	5	50·3	·2	4·3	3·1
Scorbutus and Purpura - - - - -	216	6	8·8	·2	0·8	3·7
Delirium Tremens - - - - -	3	—	·1	—	—	—
Ebrietas - - - - -	3	—	·1	—	—	—
Hydatid - - - - -	—	—	—	—	—	—
Vermes - - - - -	—	—	—	—	—	—
Phthisis Pulmonalis - - - - -	25	6	1·0	·2	0·1	3·7
Hepatitis - - - - -	55	5	2·2	·2	0·2	3·1
Icterus - - - - -	33	1	1·4	—	0·1	0·6
Spleen - - - - -	108	2	4·4	·1	0·4	1·2
All other causes - - - - -	12,201	72	499·	2·9	42·4	44·4

XXIII.—POONA DIVISION.

			All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Ethiopic Disease.
DIVISION (Average strength, 5,961. Daily sick, 199'4.)	Admissions	- - -	6,380	3	2,943	115	158	24	8	18	7	191
	Deaths	- - -	23	1	6	3	2	-	-	2	1	-
	Ratio per mille.											
	Admissions	- - -	1,070'3	'5	493'7	19'3	26'5	4'0	1'3	3'0	1'2	3'20
KIRKEE (Average strength, 126. Daily sick, 3'3.)	Deaths	- - -	3'9	'2	1'0	'5	'3	-	-	'3	'2	-
	Ratio per mille.											
	Admissions	- - -	152	-	78	8	4	-	1	2	2	7
	Deaths	- - -	1	-	-	-	-	-	-	1	-	-
POONA (Average strength, 2,693. Daily sick, 123'9.)	Ratio per mille.											
	Admissions	- - -	1,206'3	-	619'0	63'5	31'7	-	7'9	15'8	15'8	55'6
	Deaths	- - -	7'9	-	-	-	-	-	-	7'9	-	-
	Ratio per mille.											
MAUNDERDEO (Average strength, 93. Daily sick, 4'2.)	Admissions	- - -	3,730	-	1,764	39	88	13	5	9	2	122
	Deaths	- - -	9	-	3	-	-	-	-	1	1	-
	Ratio per mille.											
	Admissions	- - -	1,385'1	-	662'5	14'5	32'7	4'8	1'9	3'3	'7	45'3
SHOLAPOOR (Average strength, 722. Daily sick, 14'5.)	Deaths	- - -	3'3	-	1'1	-	-	-	-	0'4	0'4	-
	Ratio per mille.											
	Admissions	- - -	160	-	73	5	1	-	-	-	-	-
	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
SEROOR (Average strength, 194. Daily sick, 2'6.)	Ratio per mille.											
	Admissions	- - -	1,720'4	-	784'9	53'8	10'8	-	-	-	-	64'5
	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
AHMEDNUGGUR (Average strength, 720. Daily sick, 21'6.)	Admissions	- - -	460	3	235	23	17	1	-	1	-	12
	Deaths	- - -	8	1	2	2	2	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	637'1	4'2	325'5	31'9	23'5	1'4	-	1'4	-	16'6
MALIGAUM (Average strength, 570. Daily sick, 9'2.)	Deaths	- - -	11'1	1'4	2'8	2'8	2'8	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	75	-	30	1	-	-	-	-	-	5
	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
ASEERGHUR (Average strength, 671. Daily sick, 15'3.)	Ratio per mille.											
	Admissions	- - -	386'6	-	154'6	5'2	-	-	-	-	-	25'8
	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
DHOOLIA	Admissions	- - -	664	-	283	17	14	2	-	5	1	21
	Deaths	- - -	2	-	1	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	922'2	-	393'1	23'6	19'4	2'8	-	6'9	1'4	29'2
DHOOLIA (Average strength, 671. Daily sick, 15'3.)	Deaths	- - -	2'8	-	1'4	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	410	-	122	10	9	3	-	1	-	5
	Deaths	- - -	2	-	-	-	-	-	-	-	-	-
DHOOLIA (Average strength, 671. Daily sick, 15'3.)	Ratio per mille.											
	Admissions	- - -	719'3	-	214	17'5	15'8	5'2	-	1'8	-	8'7
	Deaths	- - -	3'5	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
DHOOLIA (Average strength, 671. Daily sick, 15'3.)	Admissions	- - -	151	-	90	2	9	-	-	-	-	2
	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	877'9	-	523'2	11'6	52'3	-	-	-	-	116
DHOOLIA (Average strength, 671. Daily sick, 15'3.)	Deaths	- - -	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions	- - -	578	-	248	10	16	5	2	-	2	11
	Deaths	- - -	1	-	-	1	-	-	-	-	-	-
DHOOLIA (Average strength, 671. Daily sick, 15'3.)	Ratio per mille.											
	Admissions	- - -	861'4	-	369'6	14'8	23'8	7'5	3'0	-	3'0	16'4
	Deaths	- - -	1'5	-	-	1'5	-	-	-	-	-	-
	Ratio per mille.											

XXV.—NORTHERN DIVISION—continued.

			All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Enthetic Disease.
BROACH - - - - - (Average strength, 49. Daily sick, 1'5)	Admissions - - -	-	89	-	49	2	5	1	-	-	-	1
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1,816'3	-	1,000'0	40'8	102'	20'4	-	-	-	20'4
BARODA - - - - - (Average Strength, 577. Daily sick, 12'9.)	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	494	-	160	14	17	2	-	2	-	16
	Deaths - - -	-	3	-	1	2	-	-	-	-	-	-
AHMEDABAD - - - - - (Average strength, 1,228. Daily sick, 32'5.)	Ratio per mille.											
	Admissions - - -	-	856'2	-	277'3	24'3	29'4	3'5	-	3'5	-	27'7
	Deaths - - -	-	5'2	-	1'7	3'5	-	-	-	-	-	-
	Ratio per mille.											
DEESA - - - - - (Average strength, 920. Daily sick, 20'5.)	Admissions - - -	-	1,040	1	508	19	36	-	3	2	-	22
	Deaths - - -	-	11	1	2	-	1	-	1	-	-	-
	Ratio per mille.											
	Admissions - - -	-	846'9	0'8	413'7	15'5	21'2	-	2'4	1'6	-	17'9
SADRA (Outpost) (Average strength, 81. Daily sick, 1'8.)	Deaths - - -	-	9'0	0'8	1'6	-	0'8	-	0'8	-	-	-
	Ratio per mille.											
	Admissions - - -	-	827	-	285	14	34	3	-	3	2	27
	Deaths - - -	-	2	-	2	-	-	-	-	-	-	-
RAJKOTE - - - - - (Average strength, 717. Daily sick, 28'1.)	Ratio per mille.											
	Admissions - - -	-	898'9	-	309'8	15'2	37	3'3	-	3'3	2'2	29'3
	Deaths - - -	-	2'2	-	22	-	-	-	-	-	-	-
	Ratio per mille.											
POREBUNDER (Field Force) (Average strength, 54. Daily sick, 7'2.)	Admissions - - -	-	61	1	27	1	3	-	-	-	-	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	753'1	12'3	333'3	12'3	37'0	-	-	-	-	-
DWARKA - - - - - (Average strength, 510. Daily sick, 18'6.)	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1,038	2	579	5	18	12	1	2	6	14
	Deaths - - -	-	8	1	1	-	1	-	-	-	1	-
BHOOJ - - - - - (Average strength, 577. Daily sick, 21'8.)	Ratio per mille.											
	Admissions - - -	-	1,447'7	2'8	807'5	7'0	25'1	16'7	1'4	2'8	8'4	19'5
	Deaths - - -	-	11'2	1'4	1'4	-	1'4	-	-	-	1'4	-
	Ratio per mille.											
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Admissions - - -	-	238	-	207	2	3	-	-	-	3	-
	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	4,407'4	-	3,833'3	37	55'6	-	-	-	55'6	-
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Deaths - - -	-	-	-	-	-	-	-	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	623	-	242	7	14	7	1	3	3	4
	Deaths - - -	-	5	-	1	-	-	1	-	-	-	-
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Ratio per mille.											
	Admissions - - -	-	1,221'6	-	474'5	13'7	27'4	33'3	2	5'9	5'9	7'9
	Deaths - - -	-	9'8	-	2'0	-	-	2'0	-	-	-	-
	Ratio per mille.											
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Admissions - - -	-	713	-	390	15	■	7	-	1	1	11
	Deaths - - -	-	5	-	2	-	-	1	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1,235'6	-	675'9	26	8'7	12'1	-	1'7	1'7	19'1
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Deaths - - -	-	8'7	-	3'5	-	-	1'7	-	-	-	-
	Ratio per mille.											
	Admissions - - -	-	1,224	5	1,085	15	7	4	-	-	1	1
	Deaths - - -	-	7	4	1	1	-	-	-	-	-	-
BURDA CHOWKEE - - - - - (Average strength, 216. Daily sick, 30'1.)	Ratio per mille.											
	Admissions - - -	-	5,666'6	23'1	5,023'1	69'4	32'4	18'5	-	-	4'6	4'6
	Deaths - - -	-	32'4	18'5	4'6	4'6	-	-	-	-	-	-
	Ratio per mille.											

XXVI.—SIND DIVISION.

			All Causes.	Cholera.	Fever.	Dysentery.	Diarrhea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Euthetic Disease.
DIVISION	Admissions - - -	5,294	1	3,140	84	81	11	10	30	73	141	
	Deaths - - -	26	-	5	1	-	-	2	1	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	1,518.2	0.3	900.4	24.1	23.2	3.2	2.9	8.6	20.9	40.4	
KURACHEE	Deaths - - -	7.5	-	1.4	0.3	-	-	0.6	0.3	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	489	1	196	9	4	2	2	-	-	55	
	Deaths - - -	3	-	1	-	-	-	-	-	-	-	
HYDERABAD	<i>Ratio per mille.</i>											
	Admissions - - -	739.6	1.5	296.5	13.6	6.1	3.0	3.0	-	-	83.2	
	Deaths - - -	4.5	-	1.5	-	-	-	-	-	-	-	
	<i>Ratio per mille.</i>											
JACOBABAD	Admissions - - -	274	-	104	7	5	1	2	-	-	42	
	Deaths - - -	4	-	1	-	-	-	1	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	440.5	-	167.2	11.3	8.0	1.6	3.2	-	-	67.5	
	Deaths - - -	6.4	-	1.6	-	-	-	1.6	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	4,531	-	2,840	68	72	8	6	30	73	44	
	Deaths - - -	19	-	3	1	-	-	1	1	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	2,055.8	-	1,288.6	30.9	32.7	3.6	2.7	13.6	33.1	20	
	Deaths - - -	8.6	-	1.4	0.5	-	-	0.5	0.5	-	-	

XXVII.—BOMBAY BRIGADE.

BRIGADE	Admissions - - -	2,221	-	1,109	42	119	70	2	2	1	28	
	Deaths - - -	23	-	13	2	1	2	-	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	1,072.9	-	536.2	20.2	57.5	33.8	1.1	1.1	0.5	13.5	
BOMBAY	Deaths - - -	12.1	-	6.3	1.1	0.5	1.1	-	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	1,988	-	1,011	26	105	69	1	2	1	27	
	Deaths - - -	24	-	13	2	1	2	-	-	-	-	
TANNA	<i>Ratio per mille.</i>											
	Admissions - - -	1,127.6	-	573.4	14.7	59.6	39.1	.6	1.1	.6	15.3	
	Deaths - - -	13.6	-	7.4	11.1	.6	1.1	-	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	233	-	98	16	14	1	1	-	-	1	
	Deaths - - -	1	-	-	-	-	-	-	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	759.0	-	319.2	52.1	45.6	3.3	3.3	-	-	3.3	
	Deaths - - -	3.3	-	-	-	-	-	-	-	-	-	

XXVIII.—BELGAUM BRIGADE.

BRIGADE	Admissions - - -	1,957	2	788	50	48	13	6	5	-	68	
	Deaths - - -	14	1	3	-	-	1	1	-	-	-	
	<i>Ratio per mille.</i>											
	Admissions - - -	800.1	0.8	322.6	00.9	19.6	5.3	2.5	2.0	-	27.8	
	Deaths - - -	5.7	.4	1.2	-	-	.4	.4	-	-	-	

XXVIII.—BELGAUM BRIGADE—continued.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhoea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Euthetic Disease.
KOLAPOOR (Average strength, 336. Daily sick, 14'4.)	Admissions - -	190	1	53	9	3	1	3	-	-	8
	Deaths - - -	2	-	-	-	-	-	1	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	565'4	3'	157'7	26'8	8'9	3'	8'9	-	-	23'8
KULUDGHEE (Average strength, 137. Daily sick, 2'9.)	Deaths - - -	6'	-	-	-	-	-	3'	-	-	-
	Admissions - -	76	-	20	4	3	-	-	-	-	10
	Deaths - - -	-	-	-	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
BELGAUM - (Average strength, 1,307. Daily sick, 45'5.)	Admissions - -	554'7	-	146'	29'2	21'9	-	-	-	-	73'
	Deaths - - -	-	-	-	-	-	-	-	-	-	-
	Admissions - -	1,298	-	673	37	41	3	3	4	-	37
	Deaths - - -	7	-	2	-	-	1	-	-	-	-
DHARWAR (Average strength, 666. Daily sick, 13'7.)	<i>Ratio per mille.</i>										
	Admissions - -	993'1	-	514'9	28'3	31'4	2'3	2'3	3'8	-	28'3
	Deaths - - -	5'4	-	1'5	-	-	0'8	-	-	-	-
	Admissions - -	393	1	42	-	1	9	-	1	-	13
ADEN (Average strength, 971. Daily sick, 44'1.)	Deaths - - -	5	1	1	-	-	-	-	-	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	590'1	1'5	63'1	-	1'5	13'5	-	1'5	-	19'5
	Deaths - - -	7'5	1'5	1'5	-	-	-	-	-	-	-

XXIX.—ADEN BRIGADE.

BRIGADE (Average strength, 1,037. Daily sick, 47'3.)	Admissions - -	968	-	267	28	37	50	3	12	3	28
	Deaths - - -	12	-	2	-	-	1	1	2	-	-
	<i>Ratio per mille.</i>										
	Admissions - -	933'5	-	257'5	27'0	35'7	48'2	2'9	11'5	2'9	27'0
ADEN (Average strength, 971. Daily sick, 44'1.)	Deaths - - -	11'5	-	1'9	-	-	1'	1'	1'9	-	-
	Admissions - -	862	-	251	13	33	24	3	12	3	28
	Deaths - - -	11	-	2	-	-	1	1	2	-	-
	<i>Ratio per mille.</i>										
ADEN (Average strength, 971. Daily sick, 44'1.)	Admissions - -	887'7	-	258'5	13'4	33'9	24'7	3'1	12'4	3'1	28'8
	Deaths - - -	11'3	-	2'1	-	-	1'0	1'0	2'1	-	-

XXIX.—ADEN BRIGADE—continued.

		All Causes.	Cholera.	Fever.	Dysentery.	Diarrhea.	Scurvy.	Phthisis.	Hepatitis and Icterus.	Spleen Disease.	Euthetic Disease.
PERIM (Average strength, 66. Daily sick, 3·2.)	Admissions - -	106	-	16	15	4	26	-	-	-	-
	Deaths - - -	1	-	-	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - -	1,606·1	-	242·4	227·3	60·6	393·9	-	-	-	-
	Deaths - - -	15·1	-	-	-	-	-	-	-	-	-

XXX.—TROOPS MARCHING.

(Average strength, 269. Daily sick, 11·8)	Admissions - -	397	-	188	4	20	3	-	1	-	10
	Deaths - - -	2	-	1	-	-	-	-	-	-	-
	Ratio per mille.										
	Admissions - -	1,475·8	-	698·9	14·9	74·3	11·1	-	3·7	-	37·2
	Deaths - - -	7·4	-	3·7	-	-	-	-	-	-	-

XXXI.—STATIONS, arranged in order of the Highest Ratios of SICKNESS and MORTALITY among the TROOPS during the Year 1866.

Average Strength.	SICKNESS.		Average Strength.	MORTALITY.	
	Names.	Per Mille.		Names.	Per Mille.
216	Burda Chowkee - - - -	5,666·7	216	Burda Chowkee - - - -	32·4
54	Porebunder - - - - -	4,407·4	66	Perim - - - - -	15·1
629	Surat - - - - -	2,225·7	1,763	Bombay - - - - -	13·1
2,204	Jacobabad - - - - -	2,055·8	971	Aden - - - - -	11·3
49	Broach - - - - -	1,816·6	717	Rajkote - - - - -	11·2
93	Maunderdeo - - - - -	1,720·4	722	Sholapoor - - - - -	11·1
66	Perim - - - - -	1,606·1	510	Dwarka - - - - -	9·8
717	Rajkote - - - - -	1,447·7	1,223	Ahmedabad - - - - -	9·0
2,693	Poona - - - - -	1,385·1	577	Bhooj - - - - -	8·7
577	Bhooj - - - - -	1,235·7	2,204	Jacobabad - - - - -	8·6
510	Dwarka - - - - -	1,221·6	126	Kirkee - - - - -	7·9
1,047	Mhow - - - - -	1,208·2	1,047	Mhow - - - - -	7·6
126	Kirkee - - - - -	1,206·3	666	Dharwar - - - - -	7·5
1,763	Bombay - - - - -	1,127·6	622	Hydrabad - - - - -	6·4
873	Nuseerabad - - - - -	1,029·8	629	Surat - - - - -	6·3
854	Neemuch - - - - -	1,014·0	336	Kolhapoor - - - - -	6·0
1,307	Belgaum - - - - -	993·1	1,307	Belgaum - - - - -	5·3
248	Augur - - - - -	931·4	877	Baroda - - - - -	5·2
720	Ahmednagur - - - - -	922·2	873	Nuseerabad - - - - -	4·6
380	Mehidpoor - - - - -	907·9	661	Kurachee - - - - -	4·5
221	Indore - - - - -	900·5	248	Augur - - - - -	4·0
920	Deesa - - - - -	898·9	570	Maligaum - - - - -	3·5
971	Aden - - - - -	887·7	2,693	Poona - - - - -	3·3
172	Aseerghur - - - - -	877·9	307	Tanna - - - - -	3·3
671	Dhoolia - - - - -	861·4	720	Ahmednagur - - - - -	2·8
577	Baroda - - - - -	856·2	854	Neemuch - - - - -	2·3
1,223	Ahmedabad - - - - -	846·9	920	Deesa - - - - -	2·2
307	Tanna - - - - -	758·9	671	Dhoolia - - - - -	1·5
81	Sudra - - - - -	753·1			
661	Kurachee - - - - -	739·5			
570	Maligaum - - - - -	719·3			
722	Sholapoor - - - - -	637·1			
666	Dharwar - - - - -	590·1			
336	Kolhapoor - - - - -	565·5			
137	Kulladghee - - - - -	554·7			
622	Hyderabad - - - - -	440·5			
194	Seroor - - - - -	386·6			

CANTONMENTS.

THE general population of cantonments is not accurately known, and the returns of death rendered can only be viewed as approximately correct—as reported.

In Poona cantonment the death-rate was 14 per thousand:

„ Mhow	„	„	14	„
„ Neemuch	„	„	24	„
„ Surat	„	„	41	„
„ Deesa	„	„	16	„
„ Jacobabad	„	„	25	„
„ Bombay	„	„	31	„
„ Belgaum	„	„	15	„
„ Aden	„	„	20	„

Fever is reported to have been by far the most prevalent and most fatal disease. There was a remarkable immunity from small-pox and cholera. A few isolated cases of cholera occurred. In Sholapoor cantonment only, where there were 42 deaths from it, did the disease assume an epidemic form.

DEATHS Reported at the CANTONMENT of Poona during the Year 1866.

Reported Population: Male - 17,136. Female - 14,850.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	14	5	1	1	-	-	-	2	15	8
February - - - -	-	-	-	1	7	5	-	-	2	-	4	4	13	10
March - - - - -	-	-	-	-	17	10	2	-	-	-	3	7	22	17
April - - - - -	-	-	-	-	10	7	-	-	-	-	3	6	13	13
May - - - - -	-	-	-	-	5	5	3	2	-	-	5	9	13	16
June - - - - -	-	-	-	-	21	15	1	1	1	1	2	3	25	20
July - - - - -	-	-	-	-	10	22	-	1	1	-	9	9	20	32
August - - - - -	-	-	-	-	14	19	7	2	-	-	8	12	29	33
September - - -	-	-	-	-	10	15	1	3	1	-	4	6	16	24
October - - - -	-	-	-	-	9	10	3	4	-	2	5	3	17	19
November - - - -	-	-	-	-	8	10	-	-	-	-	5	10	13	20
December - - - -	-	-	-	-	19	11	1	-	-	-	5	3	25	14
YEAR - - - -	-	-	-	1	144	134	19	14	5	3	53	74	221	226

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	11,037	9,500	-	-	-	1	87	84	6	4	2	2	13	19	108	110
Jains - - - - -	124	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	3,199	2,762	-	-	-	-	21	21	3	3	2	1	3	4	29	29
Parsees - - - -	413	358	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	93	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians - -	1,398	1,101	-	-	-	-	27	23	-	-	-	-	8	14	35	37
Indo-Europeans - -	235	257	-	-	-	-	3	1	2	1	-	-	8	13	13	15
Europeans - - - -	637	757	-	-	-	-	6	5	8	6	1	-	21	24	36	35
Unknown Race - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	17,136	14,850	-	-	-	1	144	134	19	14	5	3	53	74	221	226

DEATHS Reported at the CANTONMENT of *Poorundhur* during the Year 1866.

Reported Population : Male - - 185. Female - 144.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1 8 6 6.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April - - - -	-	-	-	-	-	-	-	-	-	-	1	1	1	1
May - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
June - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
September - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEAR - - -	-	-	-	-	-	-	-	-	-	-	1	3	1	3

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	90	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jains - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - - -	41	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parsees - - - -	2	1	-	-	-	-	-	-	-	-	-	-	1	1	1	1
Jews - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians - - - -	31	9	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Indo-Europeans - - - -	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	20	36	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	185	144	-	-	-	-	-	-	-	-	-	-	1	3	1	3

DEATHS Reported at the CANTONMENT of *Satara* during the Year 1866.

Reported Population : Male - - 762. Female - 862.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1 8 6 6.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	2	-	-	-	-	-	-	-	2
February - - - -	-	-	-	-	-	2	1	-	-	-	-	-	1	2
March - - - -	-	-	-	-	1	-	-	-	-	-	1	-	2	-
April - - - -	-	-	-	-	1	2	1	-	-	-	-	-	2	2
May - - - -	-	-	-	-	-	2	-	-	-	-	-	-	-	2
June - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July - - - -	-	-	-	-	-	-	-	-	-	-	2	-	2	-
August - - - -	-	-	-	-	1	-	1	1	-	-	-	-	3	1
September - - - -	-	-	-	-	-	-	-	3	-	-	-	-	-	3
October - - - -	-	-	-	-	1	3	-	-	-	-	-	-	1	3
November - - - -	-	-	-	-	2	-	-	-	-	-	-	-	2	-
December - - - -	-	-	-	-	2	1	-	-	-	-	-	2	2	3
YEAR - - -	-	-	-	-	8	12	3	4	-	-	4	2	15	18

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	497	595	-	-	-	-	4	6	1	3	-	-	1	2	6	11
Jains - - - -	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - - -	199	218	-	-	-	-	3	5	2	1	-	-	2	-	7	6
Parsees - - - -	22	16	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Jews - - - -	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians - - - -	37	30	-	-	-	-	1	-	-	-	-	-	1	-	2	-
Indo-Europeans - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	762	862	-	-	-	-	8	12	3	4	-	-	4	2	15	18

DEATHS Reported at the CANTONMENT of *Sholapoor* during the Year 1866.

Reported Population : Male - - 3,177. Female - - 2,939.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January -	-	-	-	-	-	6	3	-	-	-	-	-	-	6	3
February -	-	-	-	-	-	2	6	-	-	-	-	-	-	2	6
March -	-	-	-	-	-	6	5	-	-	-	-	-	-	6	5
April -	-	-	-	-	-	11	4	-	-	-	-	-	-	11	4
May -	-	-	-	-	-	12	13	1	-	-	-	-	-	13	13
June -	-	4	3	-	-	8	5	-	-	-	-	-	-	12	8
July -	-	18	17	-	-	18	15	-	-	-	-	-	-	36	32
August -	-	-	-	-	-	8	10	-	-	-	-	-	-	8	10
September -	-	-	-	-	-	10	4	-	-	-	-	-	-	10	4
October -	-	-	-	-	-	8	6	-	-	-	-	-	-	8	6
November -	-	-	-	-	-	7	4	-	-	-	-	-	-	7	4
December -	-	-	-	-	-	2	4	-	-	-	-	-	-	2	4
YEAR - - -		22	20	-	-	98	79	1	-	-	-	-	-	121	99

RACES.		Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos -	-	2,169	2,021	16	17	-	-	75	61	1	-	-	-	-	-	92	78
Jains -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans -	-	847	807	6	3	-	-	21	17	-	-	-	-	-	-	27	20
Parsees -	-	32	32	-	-	-	-	1	1	-	-	-	-	-	-	1	1
Jews -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians -	-	78	50	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Indo-Europeans -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans -	-	51	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -		3,177	2,939	22	20	-	-	98	79	1	-	-	-	-	-	121	99

DEATHS Reported at the CANTONMENT of *Seroor* during the Year 1866.

Reported Population : Male - - 603. Female - - 471.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January -	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
February -	-	-	-	-	-	-	1	-	-	-	-	1	-	1	1
March -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April -	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
May -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September -	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
October -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November -	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
December -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEAR - - -		-	-	-	-	-	1	-	2	-	-	3	1	3	4

RACES.		Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos -	-	246	166	-	-	-	-	-	-	-	1	-	-	2	1	2	2
Jains -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans -	-	347	302	-	-	-	-	-	1	-	1	-	-	1	-	1	2
Parsees -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians -	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans -	-	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -		603	471	-	-	-	-	-	1	-	2	-	-	3	1	3	4

DEATHS Reported at the CANTONMENT of *Ahmednugur* during the Year 1866.

Reported Population: Male - 3,515. Female - 3,465.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	5	7	2	-	1	-	7	4	15	11
February - - - -	-	-	-	-	3	3	2	-	2	1	-	7	7	11
March - - - -	1	-	-	-	4	4	-	1	-	-	-	3	5	8
April - - - -	-	-	-	-	2	7	1	-	1	-	-	1	4	8
May - - - -	-	-	-	-	3	4	1	-	-	-	1	1	5	5
June - - - -	-	-	-	-	-	1	3	-	-	-	3	4	6	5
July - - - -	-	-	-	-	-	1	1	1	-	-	7	1	8	3
August - - - -	-	-	-	-	1	-	1	1	-	-	5	5	7	6
September - - - -	-	-	-	-	4	2	-	2	-	-	8	2	12	6
October - - - -	-	-	-	-	2	3	1	1	-	-	6	2	9	6
November - - - -	-	-	-	-	3	2	1	-	-	-	2	2	6	4
December - - - -	-	-	-	-	1	-	1	-	-	-	9	2	11	2
YEAR - - -	1	-	-	-	28	34	14	6	4	1	48	34	95	75

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	2,695	2,579	1	-	-	-	16	21	10	6	4	1	34	26	65	54
Jains - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - - -	595	601	-	-	-	-	7	12	2	-	-	-	11	7	20	19
Parsees - - - -	29	26	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Jews - - - -	19	25	-	-	-	-	2	1	-	-	-	-	-	-	2	1
Native Christians - - - -	93	70	-	-	-	-	1	-	1	-	-	-	2	-	4	-
Indo-Europeans - - - -	30	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	54	121	-	-	-	-	2	-	1	-	-	-	1	-	4	-
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	3,515	3,465	1	-	-	-	28	34	14	6	4	1	48	34	95	75

DEATHS Reported at the CANTONMENT of *Malligaum* during the Year 1866.

Reported Population: Male - 3,134. Female - 3,104.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	4	1	1	1	-	1	7	5	12	8
February - - - -	-	-	-	-	2	3	-	-	-	-	6	5	8	8
March - - - -	-	-	-	-	2	1	2	-	-	1	2	3	6	5
April - - - -	-	-	-	-	2	3	-	-	-	1	3	4	5	8
May - - - -	-	-	-	-	1	5	1	-	-	-	-	3	2	8
June - - - -	-	-	-	-	1	-	2	1	-	-	6	1	9	2
July - - - -	-	-	-	-	1	-	1	-	-	-	4	1	6	1
August - - - -	-	-	-	-	-	-	-	-	-	-	2	2	2	2
September - - - -	-	-	-	-	1	1	1	1	1	-	6	-	9	2
October - - - -	-	-	-	-	4	3	1	-	-	-	-	-	5	3
November - - - -	-	-	-	-	2	3	1	-	-	-	5	2	8	5
December - - - -	-	-	-	-	-	-	1	2	-	-	4	2	5	4
YEAR - - -	-	-	-	-	20	20	11	5	1	3	45	28	77	56

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	2,381	2,381	-	-	-	-	12	16	10	4	1	3	37	20	60	43
Jains - - - -	141	57	-	-	-	-	4	-	-	-	-	-	1	-	5	-
Moosulmans - - - -	490	535	-	-	-	-	3	3	1	1	-	-	6	8	10	12
Parsees - - - -	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - -	36	57	-	-	-	-	1	1	-	-	-	-	1	-	2	1
Native Christians - - - -	62	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans - - - -	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	9	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	3,134	3,104	-	-	-	-	20	20	11	5	1	3	45	28	77	56

DEATHS Reported at the CANTONMENT of *Aseerghur* during the Year 1866.

Reported Population : Male - - 1,255. Female - - 1,370.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	1	-	-	-	-	8	5	8	5
February - - - -	-	-	-	-	-	1	-	-	-	-	1	2	1	3
March - - - -	-	-	-	-	-	1	-	-	-	-	3	1	3	2
April - - - -	-	-	-	-	-	-	-	-	-	-	-	3	-	3
May - - - -	-	-	-	-	3	-	-	-	1	-	4	1	8	1
June - - - -	-	-	-	-	1	-	-	-	-	-	-	2	-	3
July - - - -	-	-	-	-	1	-	-	-	-	-	2	-	2	1
August - - - -	-	-	-	-	1	-	-	-	1	-	3	1	4	2
September - - - -	-	-	-	-	-	-	-	-	-	-	1	2	1	2
October - - - -	-	-	-	-	1	-	-	-	-	-	1	3	1	4
November - - - -	-	-	-	-	-	-	-	-	-	-	2	2	2	3
December - - - -	-	-	-	-	1	1	-	-	-	-	2	-	3	1
YEAR - - - -	-	-	-	-	4	8	-	-	2	-	27	22	33	30

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	850	958	-	-	-	-	2	6	-	-	1	-	18	15	21	21
Jains - - - -	90	77	-	-	-	-	-	1	-	-	-	-	4	2	4	3
Moosulmans - - - -	290	313	-	-	-	-	2	1	-	-	1	-	5	5	8	6
Parsees - - - -	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians - - - -	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans - - - -	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	3	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	1,255	1,370	-	-	-	-	4	8	-	-	2	-	27	22	33	30

DEATHS Reported at the CANTONMENT of *Dhoolia* during the Year 1866.

Reported Population : Male - - 646. Female - - 413.	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	1	-	-	-	1	-	-	-	2
February - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March - - - -	-	-	-	-	-	3	-	-	-	-	-	-	-	3
April - - - -	-	-	-	-	-	2	-	-	-	-	-	-	-	2
May - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
June - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
July - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
October - - - -	-	-	-	-	2	1	1	-	-	-	-	-	3	1
November - - - -	-	-	-	-	1	-	-	-	-	-	-	1	1	1
December - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
YEAR - - - -	-	-	-	-	3	8	1	-	-	1	1	3	5	12

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	532	321	-	-	-	-	3	5	1	-	-	1	-	2	4	8
Jains - - - -	-	-	-	-	-	-	-	3	-	-	-	-	1	-	1	3
Moosulmans - - - -	87	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parsees - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians - - - -	18	14	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Indo-Europeans - - - -	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	646	413	-	-	-	-	3	8	1	-	-	1	1	3	5	12

DEATHS Reported at the CANTONMENT of *Mhow* during the Year 1866.

Reported Population : Male - - 11,477. Female - 9,603.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	-	-	-	-	-	9	6	-	-	-	-	5	2	14	8
February	-	-	-	-	-	9	8	-	3	-	-	4	2	13	13
March	-	-	-	-	-	2	3	-	-	-	-	2	-	4	3
April	-	-	-	-	-	13	7	3	2	1	-	5	2	22	11
May	-	-	-	1	-	5	5	1	-	1	-	4	1	12	6
June	-	-	-	-	-	4	3	-	-	-	-	-	4	4	7
July	-	-	-	-	-	3	2	5	2	-	-	3	5	11	9
August	-	-	-	-	-	1	2	4	1	-	1	3	1	8	5
September	-	-	-	-	-	2	3	1	1	-	-	3	7	6	11
October	-	-	-	-	-	17	15	-	1	1	-	5	7	23	23
November	-	-	-	-	-	15	12	-	2	1	-	5	4	21	18
December	-	-	-	-	-	23	5	3	2	4	-	8	4	38	11
YEAR	-	-	-	1	-	103	71	17	14	8	1	47	39	176	125

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	7,858	6,099	-	-	1	-	61	34	13	7	5	-	33	24	113	65
Jains	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans	8,010	2,939	-	-	-	-	40	34	-	3	2	1	6	7	48	45
Parsees	127	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews	24	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	258	83	-	-	-	-	-	1	-	-	-	-	1	3	1	4
Indo-Europeans	25	38	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Europeans	173	318	-	-	-	-	2	2	4	4	1	-	7	3	14	9
Unknown Race	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	11,477	9,603	-	-	1	-	103	71	17	14	8	1	47	39	176	125

DEATHS Reported at the CANTONMENT of *Mehidpoor* during the Year 1866.

Reported Population : Male - - 332. Female - 445.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	-	-	-	-	-	-	1	-	-	-	-	-	1	-	2
February	-	-	-	-	-	2	-	1	-	-	-	-	-	2	1
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	1	-	1	-	-	-	-	-	1	1
August	-	-	-	-	-	1	-	1	-	-	-	-	-	1	1
September	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-
December	-	-	-	-	-	-	-	1	-	-	-	1	2	2	2
YEAR	-	-	-	-	-	5	3	1	3	-	-	1	3	7	9

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	262	356	-	-	-	-	3	3	1	3	-	-	-	3	4	9
Jains	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans	54	65	-	-	-	-	2	-	-	-	-	-	1	2	3	-
Parsees	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews	7	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	332	445	-	-	-	-	5	3	1	3	-	-	1	3	7	9

DEATHS Reported at the CANTONMENT of *Neemuch* during the Year 1866.

Reported Population : Male - - 4,771 Female - 3,706		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident. and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	15	3	-	-	-	-	8	4	23	7
February - - - -	-	-	-	-	-	12	6	-	-	-	-	-	-	12	6
March - - - - -	-	-	-	-	-	3	2	-	-	-	-	1	-	4	2
April - - - - -	-	-	-	-	-	6	11	1	-	-	-	-	-	7	11
May - - - - -	-	-	-	-	-	2	2	-	-	1	-	-	-	3	2
June - - - - -	-	-	-	-	-	2	2	-	-	-	-	-	1	2	3
July - - - - -	-	-	-	-	-	5	-	-	-	-	-	2	-	7	-
August - - - - -	-	-	-	-	-	4	14	-	-	-	-	-	1	4	15
September - - -	-	-	-	-	-	7	4	1	-	-	-	2	-	10	4
October - - - -	-	-	-	-	-	17	8	-	-	-	-	1	-	18	8
November - - -	-	-	-	-	-	12	9	-	-	-	-	3	-	15	9
December - - -	-	-	-	-	-	10	10	1	-	-	-	7	3	18	13
YEAR - - - -	-	-	-	-	-	95	71	3	-	1	-	24	9	123	80

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	3,195	2,376	-	-	-	-	75	60	3	-	1	-	18	9	97	69
Jains - - - - -	304	237	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	1,157	1,038	-	-	-	-	19	11	-	-	-	-	3	-	22	11
Parsees - - - -	41	29	-	-	-	-	-	-	-	-	-	-	3	-	3	-
Jews - - - - -	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	55	15	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Indo-Europeans	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race -	10	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes - -	4,771	3,706	-	-	-	-	95	71	3	-	1	-	24	9	123	80

DEATHS Reported at the CANTONMENT of *Nuseerabad* during the Year 1866.

Reported Population : Male - - 9,396 Female - 7,928		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	2	4	2	-	-	1	1	2	5	7
February - - - -	-	-	-	-	-	7	4	2	1	-	-	9	6	18	11
March - - - - -	-	-	-	-	-	4	6	5	1	1	-	10	8	20	15
April - - - - -	-	-	-	-	-	15	1	1	-	1	-	10	4	27	5
May - - - - -	-	-	-	-	-	14	7	1	-	1	1	7	4	23	12
June - - - - -	-	-	-	-	-	7	1	1	1	-	-	5	4	13	6
July - - - - -	-	-	-	-	-	5	3	2	-	1	2	6	3	14	8
August - - - - -	-	-	-	-	-	4	5	1	-	-	-	8	3	13	8
September - - -	-	-	-	-	-	7	5	-	4	-	-	4	8	11	17
October - - - -	-	-	-	-	-	5	3	1	3	-	-	2	4	8	10
November - - -	-	-	-	-	-	7	2	-	-	-	-	2	4	9	6
December - - -	-	-	-	-	-	3	3	-	1	-	-	4	3	7	7
YEAR - - - -	-	-	-	-	-	80	44	16	11	4	4	68	53	168	112

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	6,951	5,768	-	-	-	-	61	36	13	8	3	4	45	40	122	88
Jains - - - - -	98	83	-	-	-	-	1	-	-	-	-	-	1	-	2	-
Moosulmans - -	2,173	1,870	-	-	-	-	15	8	2	-	1	-	18	10	36	18
Parsees - - - -	23	16	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Jews - - - - -	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	62	20	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Indo-Europeans	3	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Europeans - - -	70	160	-	-	-	-	1	-	1	3	-	-	3	3	5	6
Unknown Race -	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes - -	9,396	7,928	-	-	-	-	80	44	16	11	4	4	68	53	168	112

DEATHS Reported at the CANTONMENT of *Surat* during the Year 1866.

Reported Population: Male - - 334 Female - - 483	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January - - - -	-	-	-	-	1	1	-	-	-	-	-	-	1	1
February - - - -	-	-	-	-	1	2	-	-	-	-	-	-	-	2
March - - - - -	-	-	-	-	1	-	-	1	-	-	1	-	2	1
April - - - - -	-	-	-	-	1	2	-	-	-	-	1	-	1	3
May - - - - -	-	-	-	-	1	-	1	-	-	-	1	-	3	-
June - - - - -	-	-	-	-	-	2	-	1	-	-	1	-	1	3
July - - - - -	-	-	-	-	1	-	-	-	-	-	-	1	1	1
August - - - - -	-	-	-	-	1	-	-	1	-	-	-	-	1	1
September - - -	-	-	-	-	-	1	-	-	-	-	2	1	2	2
October - - - -	-	-	-	-	-	3	-	-	-	-	-	-	-	3
November - - -	-	-	-	-	-	-	-	1	-	-	-	1	-	2
December - - -	-	-	-	-	2	1	-	-	-	-	-	-	2	1
YEAR - - -	-	-	-	-	8	12	1	4	-	-	5	4	14	20

R A C E S.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	254	404	-	-	-	-	7	8	1	3	-	-	3	3	11	14
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	37	43	-	-	-	-	-	4	-	-	-	-	1	-	-	5
Parsees - - - -	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	20	20	-	-	-	-	-	-	-	-	-	-	2	-	2	-
Native Christians	13	3	-	-	-	-	1	-	-	1	-	-	-	-	1	1
Indo-Europeans -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	334	483	-	-	-	-	8	12	1	4	-	-	5	4	14	20

DEATHS Reported at the CANTONMENT of *Baroda* during the Year 1866.

Reported Population: Male - - 1,913 Female - 1,502	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January - - - -	-	-	-	-	-	-	-	1	-	-	-	-	-	1
February - - - -	-	-	-	-	1	-	-	-	-	-	2	1	3	1
March - - - - -	-	-	-	-	1	-	-	-	-	-	-	-	1	-
April - - - - -	-	-	-	-	-	-	-	-	1	-	-	-	-	1
May - - - - -	1	-	-	-	-	-	-	-	-	-	-	-	1	-
June - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July - - - - -	-	-	-	-	1	-	-	-	-	-	1	-	1	1
August - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October - - - -	-	-	-	-	1	-	-	-	-	-	-	-	1	-
November - - -	-	-	-	-	3	1	1	-	-	-	-	-	4	1
December - - -	-	-	-	-	1	3	-	-	-	-	-	-	1	3
YEAR - - -	1	-	-	-	8	4	1	1	-	1	2	2	12	8

R A C E S.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	1,544	1,206	-	-	-	-	6	4	1	1	-	1	1	2	8	8
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	213	163	1	-	-	-	2	-	-	-	-	-	-	-	3	-
Parsees - - - -	97	91	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Jews - - - - -	25	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	21	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans -	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	11	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Race -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	1,913	1,502	1	-	-	-	8	4	1	1	-	1	2	2	12	8

DEATHS Reported at the CANTONMENT of *Ahmedabad* during the Year 1866.

Reported Population: Male - 1,660 Female - 1,558		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	2	-	-	-	-	-	-	1	2	1
February - - - -	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-
March - - - - -	-	-	-	-	-	1	-	-	-	-	-	1	1	2	1
April - - - - -	-	-	-	-	-	2	1	-	-	-	-	-	-	2	1
May - - - - -	-	-	2	-	-	1	2	-	-	-	-	-	-	1	4
June - - - - -	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
July - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August - - - - -	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
September - - - -	-	-	-	-	-	1	-	-	-	-	-	1	-	2	-
October - - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-
November - - - - -	-	-	-	-	-	2	-	-	-	-	-	1	-	3	-
December - - - - -	-	-	-	-	-	3	2	-	-	-	-	-	-	3	2
YEAR - - - - -	-	-	2	-	-	14	6	1	-	-	-	3	2	18	10

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	1,150	1,161	-	2	-	-	6	4	1	-	-	-	3	1	10	7
Jains - - - - -	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	316	290	-	-	-	-	5	2	-	-	-	-	-	1	5	3
Parsees - - - -	7	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	6	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	40	25	-	-	-	-	2	-	-	-	-	-	-	-	2	-
Indo-Europeans -	1	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	134	41	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Unknown race - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	1,660	1,558	-	2	-	-	14	6	1	-	-	-	3	2	18	10

DEATHS Reported at the CANTONMENT of *Deesa* during the Year 1866.

Reported Population: Male - 5,782 Female - 4,668		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - - -	-	-	-	-	-	8	2	-	-	-	-	5	5	13	7
February - - - - -	-	-	-	-	-	3	1	-	-	-	-	9	3	12	4
March - - - - -	-	-	-	-	-	6	5	-	-	-	-	2	5	8	19
April - - - - -	-	-	-	-	-	5	3	1	-	-	-	2	1	8	4
May - - - - -	-	-	-	-	-	8	1	-	-	1	-	3	3	12	4
June - - - - -	-	-	-	-	-	4	2	-	1	1	-	4	1	9	4
July - - - - -	-	-	-	-	-	6	4	-	-	-	-	6	1	12	5
August - - - - -	-	-	-	-	-	5	4	-	-	2	-	3	3	10	7
September - - - -	-	-	-	-	-	2	4	-	-	-	-	-	-	2	4
October - - - - -	-	-	-	-	-	1	1	-	-	-	-	5	4	6	5
November - - - - -	-	-	-	-	-	5	3	-	-	-	-	5	6	10	9
December - - - - -	-	-	-	-	-	3	1	1	-	-	-	3	-	7	1
YEAR - - - - -	-	-	-	-	-	56	31	2	1	4	-	47	32	109	64

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	4,344	3,701	-	-	-	-	35	17	1	-	2	-	27	27	65	44
Jains - - - - -	1	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-
Moosulmans - - -	1,260	894	-	-	-	-	18	14	1	-	1	-	18	5	38	19
Parsees - - - -	62	34	-	-	-	-	2	-	-	-	-	-	-	-	2	-
Jews - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	112	38	-	-	-	-	1	-	-	1	-	-	-	-	1	1
Indo-Europeans -	3	1	-	-	-	-	-	-	-	-	-	-	2	-	2	-
Europeans - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	5,782	4,668	-	-	-	-	56	31	2	1	4	-	47	32	109	64

DEATHS Reported at the CANTONMENT of *Rajkote* during the Year 1866.

Reported Population: Male - 329 Female - 381	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
March - - - - -	-	-	-	-	1	-	-	-	-	-	-	-	1	-
April - - - - -	-	1	-	-	3	1	-	-	-	-	1	1	4	3
May - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June - - - - -	1	-	-	-	1	-	-	-	-	-	1	-	3	-
July - - - - -	-	-	-	-	1	-	-	-	-	-	1	-	2	-
August - - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
September - - -	-	-	-	-	-	-	-	-	-	-	2	1	2	1
October - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	-
December - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
YEAR - - - -	1	1	-	-	6	3	-	-	-	-	5	3	12	7

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	235	287	1	-	-	-	6	2	-	-	-	-	2	1	9	3
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	70	67	-	1	-	-	-	1	-	-	-	-	2	-	4	-
Parsees - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	4	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	14	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo Europeans -	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - -	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3	-
All Races and Castes	329	381	1	1	-	-	6	3	-	-	-	-	5	3	12	7

DEATHS Reported at the CANTONMENT of *Bhoj* during the Year 1866.

Reported Population: Male - 365 Female - 485	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
March - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April - - - - -	-	-	-	-	1	1	-	-	-	-	1	-	2	1
May - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June - - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
July - - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
August - - - - -	-	-	-	-	-	-	1	1	-	-	-	-	1	1
September - - -	-	-	-	-	1	1	-	-	-	-	-	-	1	1
October - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
November - - - -	-	-	-	-	1	1	-	-	-	-	-	-	1	1
December - - - -	-	-	-	-	1	1	-	-	-	-	-	-	1	1
YEAR - - - -	-	-	-	-	4	5	1	1	-	-	4	-	9	6

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	233	341	-	-	-	-	4	4	-	1	-	-	2	-	6	5
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	101	110	-	-	-	-	-	1	1	-	-	-	2	-	3	1
Parsees - - - -	16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	11	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans -	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	365	485	-	-	-	-	4	5	1	1	-	-	4	-	9	6

DEATHS Reported at the CANTONMENT of *Kurachee* during the Year 1866.

Reported Population: Male - 1,391 Female - 890	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January	-	-	-	-	1	-	-	-	-	-	-	2	1	2
February	-	-	-	-	1	-	-	-	-	-	1	1	2	1
March	-	-	-	-	-	-	-	-	-	-	1	1	1	1
April	-	-	-	1	-	-	-	-	-	-	-	-	-	1
May	-	-	-	-	-	1	-	-	1	-	4	1	5	2
June	-	-	-	-	-	1	-	-	-	-	-	-	-	1
July	-	-	-	-	-	-	-	-	-	-	2	-	2	-
August	-	-	-	-	-	1	-	-	-	-	2	-	2	1
September	-	-	-	-	-	1	-	-	-	-	-	-	-	1
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	-	-	-	-	1	-	-	-	-	-	1	1	2	1
December	-	-	-	-	1	1	-	-	-	1	-	-	1	2
YEAR	-	-	-	1	4	5	-	-	1	1	11	6	16	13

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	784	386	-	-	-	1	1	3	-	-	-	-	2	1	3	5
Jains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans	209	302	-	-	-	-	1	2	-	-	1	-	2	1	4	3
Parsees	11	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews	6	6	-	-	-	-	-	-	-	-	1	-	-	-	1	-
Native Christians	119	20	-	-	-	-	-	-	-	-	-	2	-	2	-	-
Indo-Europeans	12	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans	250	157	-	-	-	-	2	-	-	-	-	5	4	7	4	-
Unknown race	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	1,391	890	-	-	-	1	4	5	-	-	1	1	11	6	16	13

DEATHS Reported at the CANTONMENT of *Hydrabad* during the Year 1866.

Reported Population: Male - 1,484 Female - 1,194	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.														
January	-	-	-	-	1	2	-	-	-	-	2	-	3	2
February	-	-	-	-	1	-	-	-	-	-	-	-	1	-
March	-	-	-	-	1	-	-	-	-	-	1	3	2	3
April	-	-	-	-	1	-	-	-	-	-	1	2	2	2
May	-	-	-	-	2	-	-	-	-	-	1	2	3	2
June	-	-	-	-	-	1	-	-	-	-	-	-	-	1
July	-	-	-	-	1	3	-	1	-	-	-	-	1	4
August	-	-	-	-	2	3	-	1	-	-	-	-	2	4
September	-	-	-	-	2	1	-	-	-	-	-	-	2	1
October	-	-	-	-	2	-	2	-	-	-	-	-	4	-
November	-	-	-	-	1	-	-	-	-	-	-	1	1	1
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEAR	-	-	-	-	14	10	2	2	-	-	5	8	21	20

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos	541	294	-	-	-	-	4	4	1	-	-	-	3	4	8	8
Jains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans	761	741	-	-	-	-	9	6	-	1	-	-	1	2	10	9
Parsees	35	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews	6	9	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Native Christians	67	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans	12	14	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Europeans	53	83	-	-	-	-	-	-	1	1	-	-	-	2	1	3
Unknown race	9	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	1,484	1,194	-	-	-	-	14	10	2	2	-	-	5	8	21	20

DEATHS Reported at the CANTONMENT of *Jacobabad* during the year 1866.

Reported Population: Male - - 3,382 Female - 1,759	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	1	4	-	-	-	1	-	-	1	5
February - - - -	-	-	-	-	-	1	-	-	-	-	4	2	4	3
March - - - - -	-	-	-	-	-	3	-	-	1	-	1	1	2	4
April - - - - -	-	-	1	-	10	3	-	-	-	-	-	-	11	3
May - - - - -	-	-	-	-	1	1	1	-	-	-	-	-	2	1
June - - - - -	-	-	1	1	2	1	-	-	-	-	5	4	8	6
July - - - - -	-	-	-	-	5	1	-	-	-	-	-	1	5	2
August - - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
September - - -	-	-	-	-	7	4	-	-	-	-	5	2	12	6
October - - - -	-	-	-	-	9	12	-	-	-	-	3	3	12	15
November - - -	-	-	-	-	7	6	3	3	-	-	1	-	11	9
December - - -	-	-	-	-	1	6	-	-	-	1	-	-	1	7
YEAR - - - -	-	-	2	1	43	42	4	3	1	2	19	14	69	62

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	1,079	424	-	-	1	1	17	15	1	-	1	1	4	5	24	22
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	2,248	1,296	-	-	1	-	25	27	3	3	-	1	15	9	44	40
Parsees - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	31	22	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Indo-Europeans -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - -	23	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	3,382	1,759	-	-	2	1	43	42	4	3	1	2	19	14	69	62

DEATHS Reported at the CANTONMENT of *Bombay* during the year 1866.

Reported Population: Male - - 1,182 Female - 1,591	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	3	4	-	-	-	-	-	-	3	4
February - - - -	-	-	-	-	7	4	-	-	-	-	1	1	8	5
March - - - - -	-	-	2	2	4	3	-	-	-	-	1	2	7	7
April - - - - -	-	-	-	-	1	5	-	-	-	-	-	-	1	5
May - - - - -	-	-	-	-	2	1	-	-	-	-	1	-	3	1
June - - - - -	-	-	1	-	-	2	-	-	-	-	-	-	1	2
July - - - - -	-	-	-	-	2	2	-	-	-	-	2	-	4	2
August - - - - -	-	-	-	-	1	1	1	-	-	-	1	3	3	4
September - - -	-	-	-	-	1	3	-	-	-	-	-	4	1	7
October - - - -	-	-	-	-	-	3	-	-	-	-	3	2	3	5
November - - -	-	-	-	-	1	1	-	-	-	-	-	1	1	2
December - - -	-	-	-	-	4	1	1	2	-	-	-	1	5	4
YEAR - - - -	-	-	3	2	26	30	2	2	-	-	9	14	40	48

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	880	1,232	-	-	2	2	22	22	1	1	-	-	9	13	34	38
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	182	214	-	-	-	-	4	7	1	-	-	-	-	5	7	-
Parsees - - - -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	32	50	-	-	1	-	-	1	-	1	-	-	1	1	3	-
Native Christians	75	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans -	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	9	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - -	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	1,182	1,591	-	-	3	2	26	30	2	2	-	-	14	40	48	-

DEATHS Reported at the CANTONMENT of *Kolapoor* during the Year 1866.

Reported Population: Male - - 408 Female - 513	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
March - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
April - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
June - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
July - - - -	1	-	-	-	-	-	-	-	-	-	-	1	1	1
August - - - -	-	-	-	-	1	-	-	-	-	-	1	2	2	2
September - - -	-	-	-	-	-	1	-	-	-	-	1	3	1	4
October - - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
November - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEAR - - - -	1	-	-	-	1	2	-	-	-	-	2	10	4	12

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	244	316	1	-	-	-	-	1	-	-	-	-	2	7	3	8
Jains - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	134	155	-	-	-	-	1	1	-	-	-	-	-	3	1	4
Parsees - - - -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - -	4	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians -	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans - -	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	408	513	1	-	-	-	1	2	-	-	-	-	2	10	4	12

DEATHS Reported at the CANTONMENT of *Kuladghee* during the Year 1866.

Reported Population : Male - - 113 Female - 118	Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May - - - -	-	-	-	-	-	-	-	-	-	-	1	1	1	1
June - - - -	-	-	-	-	-	-	-	-	-	-	1	-	-	1
July - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
September - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November - - - -	-	-	-	-	-	-	-	-	-	-	2	-	-	2
December - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEAR - - - -	-	-	-	-	-	-	-	-	-	-	2	4	2	4

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	59	59	-	-	-	-	-	-	-	-	-	-	1	3	1	3
Jains - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - - -	46	55	-	-	-	-	-	-	-	-	-	-	1	1	1	1
Parsees - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians -	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-Europeans - -	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - - -	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race - - -	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	113	118	-	-	-	-	-	-	-	-	-	-	2	4	2	4

DEATHS Reported at the CANTONMENT of *Belgaum* during the Year 1866.

Reported Population ; Male - - 4,300. Female - 4,941.				Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.	
1866.				Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January -	-	-	-	-	-	-	-	3	1	-	-	-	-	2	3	5	4
February -	-	-	-	-	-	-	-	1	1	-	-	-	-	2	6	3	7
March -	-	-	-	-	-	-	-	2	1	-	-	-	-	2	3	4	4
April -	-	-	-	-	-	-	-	3	5	2	-	-	-	6	5	11	10
May -	-	-	-	-	1	-	-	1	5	-	1	-	-	3	5	5	11
June -	-	-	-	1	2	-	-	3	2	4	6	-	-	1	3	9	13
July -	-	-	-	-	-	-	-	2	2	-	-	1	-	4	4	7	6
August -	-	-	-	-	-	-	-	2	6	-	-	-	-	6	1	8	9
September -	-	-	-	-	-	-	-	2	2	-	-	-	-	4	3	6	3
October -	-	-	-	-	-	-	-	1	2	-	-	-	-	1	3	2	5
November -	-	-	-	-	-	-	-	1	2	-	-	-	-	1	1	2	3
December -	-	-	-	-	-	-	-	3	-	-	1	-	-	3	1	6	2
YEAR - - -				1	2	1	-	24	29	6	8	1	-	35	38	68	77

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhœa.		Accident and Violence.		Other Causes.		All Causes.		
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
Hindoos -	-	-	-	-	-	-	18	18	6	7	1	-	15	15	42	42	
Jains -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Moosulmans -	-	-	-	-	-	-	6	7	-	-	-	-	8	11	14	18	
Parsees -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Jews -	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	
Native Christians -	-	-	-	-	-	-	-	2	-	-	-	-	4	4	4	6	
Indo-Europeans -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Europeans -	-	-	-	-	-	-	-	2	-	1	-	-	8	6	8	9	
Unknown race -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
All Races and Castes -		4,300	4,941	1	2	1	-	24	29	6	8	1	-	35	38	68	77

DEATHS Reported at the CANTONMENT of *Aden* during the Year 1866.

Reported Population : Male - - 1,639. Female - 1,035.				Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
1866.				Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January -	-	-	-	-	-	-	1	-	1	1	-	-	1	-	3	1	
February -	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	
March -	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1	
April -	-	-	-	-	-	-	1	-	1	-	-	-	-	1	2	1	
May -	-	-	-	-	-	-	1	-	2	-	-	-	2	1	2	4	
June -	-	-	-	-	-	-	1	-	4	-	-	-	1	-	5	1	
July -	-	-	-	-	-	-	2	-	1	1	-	-	-	-	1	3	
August -	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	1	
September -	-	-	-	1	-	1	1	1	-	-	-	-	-	3	1	6	
October -	-	-	-	-	-	-	-	-	1	1	-	-	2	1	3	2	
November -	-	-	-	-	-	-	1	-	-	-	-	-	2	2	2	3	
December -	-	-	-	-	-	-	1	-	2	-	-	-	3	1	5	2	
YEAR - - -				-	1	-	1	4	9	10	5	-	-	13	11	27	27

RACES.	Population.		Cholera.		Small-Pox.		Fever.		Dysentery and Diarrhoea.		Accident and Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Hindoos - - - -	706	523	-	-	-	-	3	6	6	-	-	-	5	4	14	10
Jains - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulmans - -	620	316	-	1	-	1	-	2	-	-	-	-	4	4	4	8
Parsees - - - -	18	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jews - - - - -	32	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Native Christians	125	38	-	-	-	-	1	-	-	1	-	-	1	1	2	2
Indo-Europeans -	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Europeans - - -	117	114	-	-	-	-	-	1	4	4	-	-	3	2	7	7
Unknown race - -	14	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	1,639	1,035	-	1	-	1	4	9	10	5	-	-	13	11	27	27

COLLECTORATES.

THE President was called on by Government to frame rules for the guidance of Village Patels, with regard to sick travellers (Appendix). Sick travellers.

Government sanctioned the levy of a tax from the Shrawak community at the Palitana Jutra, and a tax was exacted from pilgrims at Pundhurpoor, to provide for medical aid and sanitary measures. Pilgrimage tax.

On the receipt of information of the appearance of cholera in the Dharwar district, a recommendation was made to Government that the assemblage of pilgrims, which was about to occur at various places in the locality, should be prohibited, and Government issued directions to the magistrates to adopt all the steps, legally within their power, to prevent people resorting to the places named. Cholera.

Means of filtration of tank water came under consideration, and a proposal on the subject was submitted to Government. It is not known that any practical results ensued. Water supply.

Government issued orders for the marking out of infant burial grounds, with a view to check domiciliary interments, and instructed magistrates to endeavour to prevent the practice. Infant burial.

The high rate of mortality among emigrants had attracted attention, and was attributed, in a report by the President, to a poor state of health on embarkation, owing to detention in Bombay, where fever is endemic, the food supplied to the emigrants insufficient, and their housing bad. A set of rules, revised by the President, was published by Government, with a view to securing the care and welfare of the emigrants. Emigration.

The death returns from the various Collectorates show that cholera prevailed generally in a very small degree as compared with the preceding year; they at the same time afford proof that the disease is endemic throughout the Presidency, except it may be in Sind. Cholera.

While in 1865 the Collectorates of Sholapoor, Kulladghee, Belgaum, Dharwar, and Canara were comparatively exempt from the epidemic, it seems that in 1866 in these Collectorates (notably in Dharwar) the disease was very prevalent, more so than in the preceding year.

In accordance with a system that obtains in the Madras Presidency, of taking a census of the population every five years, the population of North Canara was numbered in 1866; a large decrease (9 per cent.) on the census of five years preceding was exhibited. The decrease is said to be, without doubt, attributable to the fever which had been prevalent in the district. Census.

It would be quite useless to attempt to draw any conclusions regarding the death rate throughout the Presidency, or in its respective districts, from the data at hand. There is reason to believe that the reported population is far from correct, and the returns of deaths are, in some instances, manifestly inaccurate. It may perhaps be legitimately inferred, by viewing the figures in total, that the general health throughout the Presidency was much better in 1866 than in the year preceding. Death rate.

The unhealthiness of the Canara district led to a proposition that Europeans in the Public Works Department should be withdrawn from Canara, and natives only employed there. As regards Europeans, the statistical information available embraced so few numbers that the disturbing effects of abnormal casualties on the results deducible were likely to be great. It was ascertained that, out of 82 European residents, the average duration of service was one year and four months. Thirty-two had to leave Canara on account of sickness, of whom a number died after departure (but from the effects of its climate), to give a mortality of nearly seven per cent.; five died in the Collectorate. On a comparison it was found that the inland stations are very much more inimical to Europeans than to natives, but that at coast stations they suffer not very unequally. It was recommended that Europeans should not be employed in Canara for a prolonged period, away from the sea-coast, and that, as natives suffer much from malarious fever at inland stations, their term of duty in the interior should be limited to one year.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Tanna* during the Year 1866.

Reported Population, 900,000. Area—Square Miles, 5,400.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - -	6	4	-	-	387	328	13	3	6	5	56	39	468	379
February - - - -	-	1	-	1	336	219	17	5	19	9	50	49	422	284
March - - - -	-	1	3	5	215	133	6	11	18	12	66	28	308	190
April - - - -	12	3	5	6	144	101	13	10	12	7	53	22	239	149
May - - - -	1	-	14	11	187	117	16	7	23	3	49	39	290	177
June - - - -	1	-	6	1	105	65	13	2	15	5	30	33	170	106
July - - - -	1	2	-	-	93	54	13	12	7	7	33	21	147	96
August - - - -	12	9	2	4	196	125	17	5	10	14	52	34	289	191
September - - - -	4	2	3	3	184	121	10	4	16	16	52	39	269	185
October - - - -	3	4	3	-	158	112	13	4	12	18	42	24	231	162
November - - - -	-	-	-	-	195	157	18	8	12	12	54	21	279	198
December - - - -	-	-	-	4	227	123	17	8	8	5	50	36	302	176
YEAR - - - -	40	26	36	35	2,427	1,655	166	79	158	113	587	385	3,414	2,293
R A C E S.														
Hindoo of caste - - -	37	16	18	21	1,971	1,385	130	64	127	97	488	317	2,771	1,900
Hindoo, low caste - -	-	5	15	11	302	185	22	11	19	11	49	31	407	254
Jain - - - -	-	-	-	-	20	4	-	-	-	-	1	-	21	4
Moosulman - - - -	3	5	2	2	102	56	8	4	9	2	21	13	145	82
Parsee - - - -	-	-	-	1	2	-	1	-	-	-	2	-	5	1
Jew - - - -	-	-	-	-	3	-	-	-	1	-	1	1	5	1
Christian - - - -	-	-	1	-	27	24	5	-	2	3	24	23	59	50
Unknown race or caste -	-	-	-	-	-	1	-	-	-	-	1	-	1	1
All Races and Castes - -	40	26	36	35	2,427	1,655	166	79	158	113	587	385	3,414	2,293

Ratio 6·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Surat* during the Year 1866.

Reported Population, 792,638. Area—Square Miles, 2,919.	Cholera.		Small-Pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - -	5	2	-	-	258	222	19	14	5	10	141	127	428	375
February - - - -	1	-	2	2	230	143	15	18	4	8	149	118	401	289
March - - - -	7	7	5	2	230	195	29	13	8	7	158	104	437	328
April - - - -	3	2	1	2	223	166	19	21	9	6	103	86	358	283
May - - - -	13	5	4	6	160	106	23	11	10	7	147	114	357	249
June - - - -	23	29	8	5	123	99	14	13	6	4	140	97	314	247
July - - - -	14	9	2	-	145	110	15	5	8	9	108	87	292	220
August - - - -	7	5	-	1	170	141	27	28	9	11	136	110	349	296
September - - - -	4	3	-	-	165	157	9	14	9	5	109	79	296	258
October - - - -	3	5	-	-	201	179	22	21	10	3	126	112	362	320
November - - - -	2	2	1	3	230	220	11	18	5	4	186	101	385	348
December - - - -	1	-	6	6	184	185	18	12	6	7	136	104	351	314
YEAR - - - -	83	69	29	27	2,319	1,923	221	188	89	81	1,589	1,239	4,330	3,527
R A C E S.														
Hindoo of caste - - -	27	13	7	6	728	595	72	55	25	24	535	391	1,394	1,084
Hindoo, low caste - -	46	48	21	20	1,345	1,139	115	101	52	44	915	714	2,494	2,066
Jain - - - -	-	-	-	-	4	5	-	-	-	-	1	1	5	6
Moosulman - - - -	9	8	-	1	220	168	32	31	10	13	119	116	390	337
Parsee - - - -	1	-	1	-	22	16	2	1	2	-	18	17	46	34
Jew - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Unknown race or caste -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes - -	83	69	29	27	2,319	1,923	221	188	89	81	1,589	1,239	4,330	3,527

Ratio 9·9 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Ahmedabad* (only Duskohee Talook) during the Year 1866.

Reported Population, 845,047. Area—Square Miles, 4,402.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - -	-	-	-	1	143	214	74	54	4	1	13	4	234	274
February - - - -	3	2	1	1	140	134	87	47	3	2	9	10	243	196
March - - - -	2	2	4	2	137	137	71	46	1	4	15	9	230	200
April - - - -	9	2	5	4	115	109	76	62	1	2	9	5	215	184
May - - - -	52	24	10	5	98	101	56	42	7	14	11	8	234	194
June - - - -	15	19	3	7	54	74	71	45	6	4	6	3	155	152
July - - - -	3	1	1	3	82	85	43	54	4	5	4	4	137	152
August - - - -	1	2	1	-	101	86	68	57	7	2	6	5	184	152
September - - - -	1	-	-	-	111	104	79	57	15	6	8	10	214	177
October - - - -	-	-	-	-	136	106	59	50	9	4	9	3	213	163
November - - - -	-	1	-	-	144	146	50	63	4	2	3	5	201	217
December - - - -	-	1	2	1	108	100	57	59	9	2	9	5	185	168
YEAR - - -	86	54	27	24	1,369	1,396	791	636	70	48	102	71	2,445	2,229
RACES.														
Hindoo of caste - - -	58	42	22	20	1,036	1,065	551	453	54	25	83	61	1,804	1,666
Hindoo, low caste - - -	13	7	3	4	160	152	80	65	8	9	12	4	276	241
Jain - - - -	-	-	-	-	25	32	21	22	1	-	1	-	48	54
Moosulman - - - -	15	4	2	-	145	145	135	92	7	14	6	6	310	261
Parsee - - - -	-	1	-	-	3	1	4	4	-	-	-	-	7	6
Jew - - - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Christian - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes - -	86	54	27	24	1,369	1,396	791	636	70	48	100	71	2,445	2,229

Ratio 5.5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Punch Mahal* during the eight months from May to December 1866.

Reported Population, 161,662. Area—Square Miles, —	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May - - - -	-	1	20	33	53	45	13	25	4	2	5	2	95	108
June - - - -	-	-	16	15	45	26	8	8	6	3	10	4	85	56
July - - - -	-	-	17	26	46	32	18	10	7	4	4	7	92	79
August - - - -	1	2	24	11	58	49	16	11	7	4	5	5	111	82
September - - - -	-	-	5	6	60	51	10	6	3	1	10	4	88	68
October - - - -	4	4	10	5	140	107	8	8	3	5	6	2	171	161
November - - - -	-	2	7	10	224	195	6	7	2	1	3	7	242	222
December - - - -	1	5	5	5	126	107	9	7	6	3	2	2	149	129
YEAR - - -	6	14	104	111	752	642	88	82	38	23	45	33	1,033	905
RACES.														
Hindoo of caste - - -	2	10	41	45	524	458	74	67	25	16	26	24	692	620
Hindoo, low caste - - -	3	2	63	63	159	140	10	11	10	6	8	4	263	226
Jain - - - -	-	-	-	-	-	44	-	-	-	-	1	-	1	-
Moosulman - - - -	1	2	-	3	69	-	4	4	3	1	8	4	85	58
Parsee - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste - -	-	-	-	-	-	-	-	-	-	-	2	1	2	1
All Races and Castes - -	6	14	104	111	752	642	88	82	38	23	45	33	1,033	905

Ratio 12 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kaira* during the Year 1866.

Reported Population, 586,606. Area—Square Miles, 1,375.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:															
January	- - -	-	-	-	-	188	137	42	30	9	1	109	63	348	231
February	- - -	3	2	-	-	184	185	43	31	2	3	114	67	346	288
March	- - -	5	2	2	-	202	186	46	25	16	7	117	103	388	323
April	- - -	13	18	5	5	210	199	68	51	13	5	108	72	417	350
May	- - -	66	42	2	1	190	151	43	32	20	5	106	80	427	311
June	- - -	7	8	5	1	135	102	35	31	12	7	68	59	262	208
July	- - -	2	2	2	-	162	137	47	30	12	7	92	86	317	262
August	- - -	1	-	1	-	190	168	42	47	3	8	104	89	341	312
September	- - -	-	1	2	-	180	147	49	36	14	12	67	61	312	257
October	- - -	3	-	4	1	249	221	34	34	6	4	110	76	406	336
November	- - -	-	1	1	4	314	256	52	35	-	4	111	76	478	376
December	- - -	-	-	4	3	214	187	36	24	3	10	103	68	360	292
YEAR	- - -	100	76	28	15	2,418	2,076	537	406	110	73	1,209	900	4,402	3,546
RACES.															
Hindoo of caste	- - -	95	66	23	14	2,039	1,752	462	359	103	62	1,044	758	3,766	3,011
Hindoo, low caste	- - -	1	3	5	1	204	156	43	27	1	6	98	88	352	281
Jain	- - -	-	-	-	-	7	15	3	2	-	-	2	4	12	21
Moosulman	- - -	4	7	-	-	166	152	29	18	6	5	65	50	270	232
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste	- - -	-	-	-	-	2	1	-	-	-	-	-	-	2	1
All Races and Castes	- - -	100	76	28	15	2,418	2,076	537	406	110	73	1,209	900	4,402	3,546

Ratio 13·5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Khandeish* during the Year 1866.

Reported Population, 822,476. Area—Square Miles, 16,597.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:															
January	- - -	7	-	11	5	225	162	68	44	8	8	53	46	372	265
February	- - -	-	-	11	12	290	171	73	47	13	35	55	38	442	303
March	- - -	2	1	8	5	173	160	61	32	3	3	59	44	306	245
April	- - -	-	1	4	6	110	109	44	33	7	4	41	39	206	192
May	- - -	3	2	8	5	139	133	74	47	11	5	30	39	265	231
June	- - -	3	3	6	5	127	133	57	38	11	5	44	40	248	224
July	- - -	-	10	7	3	133	91	60	36	5	3	29	30	234	173
August	- - -	6	5	6	2	184	142	65	52	4	6	43	44	308	251
September	- - -	7	5	-	1	196	172	55	55	4	8	39	40	301	281
October	- - -	1	1	1	-	243	186	77	36	9	4	29	43	360	270
November	- - -	1	3	4	1	348	281	65	47	8	10	33	43	459	385
December	- - -	-	-	8	4	227	147	42	39	4	5	39	22	320	217
YEAR	- - -	30	31	74	49	2,395	1,887	741	506	87	96	494	468	3,821	3,037
RACES.															
Hindoo of caste	- - -	21	26	42	23	1,866	1,477	589	398	67	84	383	365	2,968	2,373
Hindoo, low caste	- - -	5	4	24	23	325	274	102	71	13	11	63	59	532	442
Jain	- - -	-	-	-	-	3	1	2	-	-	-	-	1	5	2
Moosulman	- - -	4	1	8	3	198	134	47	37	7	1	47	43	311	219
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste	- - -	-	-	-	-	3	1	1	-	-	-	1	-	5	1
All Races and Castes	- - -	30	31	74	49	2,395	1,887	741	506	87	96	494	468	3,821	3,037

Ratio 8·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Ahmednugur* during the Year 1866.

Reported Population, 1,252,789. Area—Square Miles, 11,179.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:														
January - - - -	14	6	6	5	487	366	94	79	24	18	111	106	736	580
February - - - -	4	4	7	9	366	296	92	56	21	21	76	91	566	477
March - - - - -	7	5	9	17	381	261	71	41	43	33	85	64	596	421
April - - - - -	7	5	4	9	274	214	68	42	29	14	74	61	456	345
May - - - - -	6	7	4	2	290	241	79	51	21	18	127	104	527	423
June - - - - -	1	1	4	3	251	207	63	54	20	20	96	104	435	389
July - - - - -	4	3	1	5	286	301	74	70	26	22	114	105	505	506
August - - - - -	184	177	8	4	442	407	117	82	53	35	142	163	946	868
September - - -	129	148	2	2	396	340	92	69	19	35	146	141	784	735
October - - - -	39	32	3	3	361	302	69	50	24	15	112	113	608	515
November - - -	11	4	3	-	390	327	89	56	22	15	106	106	621	508
December - - -	4	7	3	10	341	276	72	51	22	12	102	71	554	427
YEAR - - -	410	399	64	69	4,265	3,538	980	701	324	258	1,291	1,229	7,334	6,194
RACES.														
Hindoo of caste - - -	328	315	39	43	3,296	2,760	807	564	266	224	1,001	921	5,737	4,827
Hindoo, low caste - -	54	56	15	8	635	480	109	82	36	30	155	157	1,004	813
Jain - - - - -	2	2	-	2	24	16	5	3	2	-	8	5	41	28
Moosulman - - - -	19	17	10	16	291	275	55	48	17	4	122	137	514	497
Parsee - - - - -	-	-	-	-	3	-	3	-	-	-	-	3	6	3
Jew - - - - -	-	-	-	-	5	1	-	-	-	-	-	3	5	4
Christian - - - -	1	-	-	-	8	3	1	-	-	-	4	2	8	5
Unknown race or caste -	6	9	-	-	9	3	-	4	3	-	1	1	19	17
All Races and Castes - -	410	399	64	69	4,265	3,538	980	701	324	258	1,291	1,229	7,334	6,194

Ratio 10·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Poona* during the Year 1866.

Reported Population, 679,429. Area—Square Miles, 5,250.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:														
January - - - - -	1	-	1	-	402	315	26	31	6	3	58	62	494	411
February - - - -	-	1	4	2	379	260	23	22	9	5	50	72	465	362
March - - - - -	3	2	3	1	272	258	30	19	10	13	77	58	395	351
April - - - - -	-	-	1	5	235	198	35	18	6	12	78	51	355	284
May - - - - -	4	3	7	5	297	247	28	23	7	3	86	78	429	359
June - - - - -	1	-	1	2	238	175	32	26	9	4	119	84	400	291
July - - - - -	1	1	4	1	254	219	32	23	11	9	95	84	397	337
August - - - - -	53	62	8	10	328	293	35	31	10	17	142	143	576	556
September - - - -	12	9	7	2	320	271	35	41	10	9	114	100	498	432
October - - - - -	2	2	1	1	298	258	39	29	13	9	80	75	433	374
November - - - -	1	-	-	31	295	240	38	26	10	10	57	79	401	386
December - - - -	3	-	13	7	270	225	37	27	5	5	82	70	410	334
YEAR - - -	81	80	50	67	3,588	2,959	390	316	106	99	1,038	956	5,253	4,477
RACES.														
Hindoo of caste - - -	69	62	48	65	3,013	2,486	328	276	88	83	867	809	4,413	3,781
Hindoo, low caste - -	10	15	1	2	416	348	47	28	15	12	98	95	587	500
Jain - - - - -	-	-	-	-	7	3	-	-	1	1	3	-	11	4
Moosulman - - - -	2	3	1	-	151	122	15	12	2	3	68	50	239	190
Parsee - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - -	-	-	-	-	1	-	-	-	-	-	2	2	3	2
Unknown race or caste -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes - -	81	80	50	67	3,588	2,959	390	316	106	99	1,038	956	5,253	4,477

Ratio 14·3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Sholapoor* during the Year 1866.

Reported Population, 634,867. Area—Square Miles, 4,000.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :															
January	- - - -	-	-	5	1	105	77	42	38	14	9	49	36	215	161
February	- - - -	1	3	2	3	73	47	24	24	1	4	35	28	136	109
March	- - - -	-	1	2	1	87	86	33	21	4	8	37	40	163	157
April	- - - -	1	-	4	4	73	97	19	26	9	17	55	55	161	199
May	- - - -	2	-	7	3	113	89	41	23	61	39	63	66	287	220
June	- - - -	41	26	6	7	100	81	37	34	38	26	34	31	256	205
July	- - - -	140	113	5	5	120	93	66	44	4	8	54	37	389	300
August	- - - -	508	441	3	3	173	182	112	98	26	24	115	141	937	889
September	- - - -	249	190	10	4	195	193	156	154	20	24	124	118	754	683
October	- - - -	58	42	4	3	164	160	102	89	20	11	87	57	435	362
November	- - - -	6	7	1	2	138	136	79	57	15	16	44	47	283	265
December	- - - -	7	5	14	5	123	105	30	39	7	16	30	21	211	191
YEAR	- - -	1,013	828	63	41	1,464	1,346	741	647	219	202	727	677	4,227	3,741
RACES.															
Hindoo of caste	- - -	839	693	54	36	1,248	1,173	631	545	192	176	621	575	3,585	3,198
Hindoo, low caste	- - -	98	77	6	5	110	80	54	53	18	16	56	56	342	287
Jain	- - -	7	3	1	-	7	4	1	4	-	-	6	2	22	13
Moosulman	- - -	68	52	2	-	95	89	55	43	9	9	42	42	271	235
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Unknown race or caste	- - -	1	3	-	-	4	-	-	1	-	1	2	1	7	6
All Races and Castes	- - -	1,013	828	63	41	1,464	1,346	741	647	219	202	727	677	4,227	3,741

Ratio 12·5 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Sattara* during the Year 1866.

Reported Population, 858,022. Area—Square Miles, 7,430.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :															
January	- - - -	-	-	2	1	553	507	78	72	16	13	113	109	762	702
February	- - - -	2	1	-	2	414	407	60	61	14	12	119	113	603	596
March	- - - -	1	-	4	-	409	358	68	44	11	13	114	107	607	522
April	- - - -	4	1	3	6	378	346	53	61	10	12	120	110	568	536
May	- - - -	6	4	-	2	475	378	96	61	11	7	127	115	715	567
June	- - - -	9	10	3	1	350	278	97	87	37	17	134	110	630	503
July	- - - -	31	24	1	3	380	399	143	139	28	20	138	117	721	702
August	- - - -	273	267	2	1	584	526	338	263	15	25	158	176	1,370	1,258
September	- - - -	188	206	3	3	547	516	240	264	10	16	146	174	1,134	1,179
October	- - - -	46	45	2	5	494	496	184	174	22	17	132	156	880	893
November	- - - -	4	-	-	1	420	455	107	104	14	11	110	97	655	668
December	- - - -	6	6	3	1	361	324	63	57	6	3	107	89	546	480
YEAR	- - -	570	564	23	26	5,365	4,990	1,527	1,387	194	166	1,512	1,473	9,191	8,606
RACES.															
Hindoo of caste	- - -	509	502	22	22	4,686	4,404	1,349	1,240	175	148	1,345	1,301	8,086	7,617
Hindoo, low caste	- - -	34	39	1	2	473	410	94	81	13	9	107	104	722	645
Jain	- - -	5	4	-	-	35	22	24	21	3	5	13	18	80	70
Moosulman	- - -	20	19	-	2	164	144	58	43	3	4	46	49	291	261
Parsee	- - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Jew	- - -	1	-	-	-	3	2	-	-	-	-	-	1	4	3
Christian	- - -	-	-	-	-	2	3	2	2	-	-	1	-	5	5
Unknown race or caste	- - -	1	-	-	-	2	4	-	-	-	-	-	-	3	4
All Races and Castes	- - -	570	564	23	26	5,365	4,990	1,527	1,387	194	166	1,512	1,473	9,191	8,606

Ratio 20·7 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kuladghee* during the Year 1866.

Reported Population, 563,123. Area—Square Miles, 6,500.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:														
January - - - -	-	1	9	14	111	63	34	17	4	5	61	33	219	133
February - - - -	-	-	47	44	89	68	40	22	2	8	47	42	225	184
March - - - -	9	3	35	38	186	142	53	32	7	10	96	58	386	283
April - - - -	250	221	23	27	203	165	43	41	4	5	104	80	627	539
May - - - -	404	297	33	34	200	151	65	45	10	14	175	155	887	696
June - - - -	622	494	31	23	197	146	75	76	4	2	126	101	1,055	842
July - - - -	288	294	9	13	197	151	132	105	8	6	140	132	774	701
August - - - -	304	276	21	17	249	232	265	202	12	19	177	132	1,028	878
September - - - -	180	175	3	3	239	261	330	268	17	12	185	189	954	908
October - - - -	29	37	16	15	295	250	241	238	15	19	146	99	742	658
November - - - -	6	5	11	6	258	246	158	132	2	7	66	64	501	460
December - - - -	-	1	10	17	183	124	101	69	8	9	51	45	353	265
YEAR - - -	2,092	1,804	248	251	2,407	1,999	1,537	1,247	93	116	1,374	1,130	7,751	6,547
RACES.														
Hindoo of caste - - -	1,807	1,534	212	210	2,131	1,744	1,367	1,100	82	107	1,220	994	6,819	5,689
Hindoo, low caste - - -	57	42	15	15	65	69	25	33	-	1	42	37	204	197
Jain - - - -	8	8	-	1	15	11	5	3	-	-	11	2	39	25
Moosulman - - - -	210	210	19	24	188	171	131	107	10	8	95	92	653	612
Parsee - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - -	4	2	-	-	1	-	2	-	-	-	1	-	8	2
Unknown race or caste - -	6	8	2	1	7	4	7	4	1	-	5	5	28	22
All Races and Castes - -	2,092	1,804	248	251	2,407	1,999	1,537	1,247	93	116	1,374	1,130	7,751	6,547

Ratio 25·4 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Belgaum* during the Year 1866.

Reported Population, 707,537. Area—Square Miles, 4,480.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866:														
January - - - -	-	-	40	25	301	175	19	13	9	6	162	124	531	343
February - - - -	-	-	21	24	244	155	16	6	8	5	142	133	431	323
March - - - -	-	-	21	27	307	182	14	10	15	8	189	135	546	362
April - - - -	9	4	23	17	270	189	23	11	9	3	176	149	510	373
May - - - -	125	89	17	13	304	207	29	19	4	6	219	174	698	508
June - - - -	246	201	15	10	243	170	20	7	10	6	224	177	760	571
July - - - -	188	151	11	9	206	170	19	13	8	6	263	220	695	569
August - - - -	321	265	2	4	306	176	36	17	15	10	356	309	1,036	781
September - - - -	99	91	5	3	241	171	24	7	12	9	320	232	701	513
October - - - -	100	68	7	3	292	193	28	17	9	11	244	210	680	502
November - - - -	1	1	2	2	310	232	31	12	7	5	209	144	560	396
December - - - -	1	-	22	29	284	190	16	10	7	10	145	94	475	333
YEAR - - -	1,092	870	186	166	3,308	2,210	275	142	113	85	2,649	2,101	7,623	5,574
RACES.														
Hindoo of caste - - -	816	643	137	138	2,710	1,760	218	111	85	71	2,034	1,621	6,000	4,344
Hindoo, low caste - - -	139	115	19	9	284	218	31	11	11	6	260	181	744	540
Jain - - - -	50	38	8	2	94	76	9	9	6	3	204	176	371	304
Moosulman - - - -	82	69	22	17	201	143	16	11	11	4	148	123	480	367
Parsee - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - -	5	5	-	-	19	13	1	-	-	1	2	-	27	19
Unknown race or caste - -	-	-	-	-	-	-	-	-	-	-	1	-	1	-
All Races and Castes - -	1,092	870	186	166	3,308	2,210	275	142	113	85	2,649	2,101	7,623	5,574

Ratio 18·6 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Dharwar* during the Year 1866.

Reported Population, 782,465. Area—Square Miles, 6,070.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	33	31	21	20	352	245	101	63	9	10	198	166	714	535
February	- - - -	543	413	8	14	372	244	139	89	6	10	150	140	1,218	910
March	- - - -	1,365	1,007	22	21	327	217	115	110	9	6	197	165	2,035	1,526
April	- - - -	1,096	891	17	29	271	190	116	83	7	6	219	153	1,726	1,352
May	- - - -	1,611	1,220	18	23	244	173	111	96	18	10	183	161	2,185	1,683
June	- - - -	1,072	837	23	17	210	189	121	84	9	6	193	148	1,628	1,281
July	- - - -	329	315	20	19	193	190	111	100	8	11	215	232	876	867
August	- - - -	196	112	20	14	237	182	158	130	35	23	235	224	821	675
September	- - - -	72	58	9	12	224	252	125	107	10	9	218	215	658	653
October	- - - -	34	27	10	11	304	247	115	97	15	24	218	166	696	572
November	- - - -	-	-	12	6	362	310	107	89	11	15	145	183	637	603
December	- - - -	-	-	10	17	349	299	81	60	9	7	121	121	570	504
YEAR	- - -	6,291	490	190	203	3,445	2,738	1,400	1,108	146	137	2,292	2,074	13,764	11,161
RACES.															
Hindoo of caste	- - -	4,687	3,613	144	156	2,701	2,127	1,118	857	122	111	1,759	1,002	10,531	8,466
Hindoo, low caste	- - -	778	612	22	25	347	300	180	129	9	15	251	230	1,537	1,311
Jain	- - -	37	29	2	2	26	25	9	5	1	1	23	14	98	76
Moosulman	- - -	783	642	22	20	369	284	142	117	13	9	257	226	1,586	1,298
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	1	2	-	-	-	1	-	-	1	3
Unknown race or caste	- - -	6	5	-	-	1	-	1	-	1	-	2	2	11	7
All Races and Castes	- - -	6,291	4,901	190	203	3,445	2,738	1,400	1,108	146	137	2,299	2,074	13,764	11,161

Ratio 31·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Canara* during the Year 1866.

Reported Population, 361,013. Area—Square Miles, 4,300.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	18	10	5	1	314	222	5	7	8	2	61	48	411	290
February	- - - -	10	2	13	5	285	212	22	14	7	5	68	53	405	291
March	- - - -	7	5	14	4	260	206	37	16	7	5	72	36	397	272
April	- - - -	65	53	13	13	190	119	31	13	12	10	49	39	360	247
May	- - - -	52	29	7	8	215	151	20	18	3	2	64	49	361	257
June	- - - -	115	93	7	7	161	142	45	30	13	6	52	56	393	334
July	- - - -	27	38	3	4	181	197	33	30	8	12	44	60	296	341
August	- - - -	40	29	4	4	224	213	33	34	3	3	73	69	377	352
September	- - - -	76	57	-	3	199	149	39	23	10	3	67	43	391	278
October	- - - -	52	47	1	3	221	154	20	20	63	74	58	54	415	352
November	- - - -	14	16	1	-	206	185	20	16	18	18	51	47	310	282
December	- - - -	3	1	5	1	320	230	19	15	6	6	77	60	430	313
YEAR	- - -	479	380	73	53	2,776	2,180	324	236	158	146	736	614	4,546	3,609
RACES.															
Hindoo of caste	- - -	281	223	59	38	2,206	1,770	236	163	107	86	585	494	3,474	2,774
Hindoo, low caste	- - -	94	65	8	7	278	201	46	39	11	8	78	67	515	387
Jain	- - -	14	12	2	3	99	77	19	13	5	-	18	23	157	128
Moosulman	- - -	73	72	2	2	122	80	17	18	33	52	30	24	277	248
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	15	8	2	2	63	49	6	3	2	-	20	6	108	68
Unknown race or caste	- - -	2	-	-	1	8	3	-	-	-	-	5	-	15	4
All Races and Castes	- - -	479	380	73	53	2,776	2,180	324	236	158	146	736	614	4,546	3,609

Ratio 22·6 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Rutnaghree* during the Year 1866.

Reported Population, 685,372. Area—Square Miles, 5,808.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	3	3	3	1	310	244	39	13	19	5	165	152	539	418
February	- - - -	9	6	3	2	292	241	29	17	6	6	178	140	517	412
March	- - - -	19	11	14	9	388	338	43	19	18	8	201	175	683	560
April	- - - -	8	8	8	7	324	290	43	22	11	4	151	153	545	484
May	- - - -	10	6	7	6	297	262	44	23	20	7	166	163	544	467
June	- - - -	7	4	6	3	284	241	31	29	16	11	175	157	519	445
July	- - - -	11	7	2	10	334	315	49	21	13	18	160	192	569	563
August	- - - -	34	34	8	5	440	443	43	29	14	11	274	210	813	741
September	- - - -	12	2	10	4	333	296	37	18	10	7	190	195	592	522
October	- - - -	7	4	11	4	256	254	34	11	13	15	139	159	460	447
November	- - - -	3	6	6	9	235	237	35	13	8	7	132	120	419	392
December	- - - -	2	1	11	10	284	251	22	19	6	9	141	148	466	438
YEAR	- - -	125	92	89	70	3,777	3,412	449	234	154	108	2,072	1,973	6,666	5,889
RACES.															
Hindoo of caste	- - -	95	62	69	66	3,003	2,792	369	183	129	96	1,809	1,740	5,474	4,939
Hindoo, low caste	- - -	23	26	13	3	534	433	57	34	15	8	177	166	819	670
Jain	- - -	-	-	-	-	2	6	-	-	-	-	13	12	15	18
Moosulman	- - -	7	4	7	1	230	179	22	15	9	4	67	51	342	254
Parsee	- - -	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	7	1	1	2	1	-	6	4	15	7
Unknown race or caste	- - -	-	-	-	-	-	1	-	-	-	-	-	-	-	1
All Races and Castes	-	125	92	89	70	3,777	3,412	449	234	154	108	2,072	1,973	6,666	5,889

Ratio, 18.3 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Kurachee* during the Year 1866.

Reported Population, 340,000. Area—Square Miles, 19,240.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	3	-	2	-	224	126	24	12	4	-	28	16	285	154
February	- - - -	-	-	7	6	127	82	14	10	-	2	12	9	160	109
March	- - - -	-	-	2	2	146	87	17	15	7	1	56	41	228	146
April	- - - -	2	1	6	6	115	73	10	4	6	2	57	37	196	123
May	- - - -	2	-	-	3	88	50	6	7	5	3	33	26	134	89
June	- - - -	-	-	9	10	94	66	5	9	16	8	22	6	146	99
July	- - - -	-	-	2	3	88	50	6	3	15	5	29	19	140	80
August	- - - -	-	-	-	-	62	54	3	6	79	52	37	23	181	135
September	- - - -	-	-	-	-	82	44	7	1	15	2	16	10	120	57
October	- - - -	-	-	1	-	107	66	7	6	9	4	17	9	141	85
November	- - - -	-	-	1	-	137	114	20	19	6	2	14	16	178	151
December	- - - -	-	-	1	-	158	120	2	-	8	-	12	7	181	127
YEAR	- - -	7	1	31	30	1,428	932	121	92	170	81	333	219	2,019	1,355
RACES.															
Hindoo of caste	- - -	-	-	10	13	329	219	24	32	14	2	93	65	470	331
Hindoo, low caste	- - -	-	-	1	-	34	24	8	1	-	3	17	9	60	37
Jain	- - -	-	-	-	-	3	4	-	-	-	-	1	-	4	4
Moosulman	- - -	7	1	20	17	1,055	682	88	59	152	76	220	144	1,542	979
Parsee	- - -	-	-	-	-	1	1	-	-	-	-	1	-	2	1
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	2	1	1	-	3	-	1	1	7	2
Unknown race or caste	- - -	-	-	-	-	4	1	-	-	1	-	-	-	5	1
All Races and Castes	-	7	1	31	30	1,428	932	121	92	170	81	333	219	2,090	1,355

Ratio, 10.0 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Hyderabad* during the Year 1866.

Reported Population, 630,000. Area—Square Miles, 10,774.	Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - - -	-	-	-	1	233	160	17	11	13	6	64	74	327	252
February - - - - -	-	-	-	-	170	106	25	11	6	2	42	29	243	148
March - - - - -	-	-	5	1	172	117	84	70	4	3	57	38	322	229
April - - - - -	1	-	14	6	224	163	24	19	2	1	63	52	328	246
May - - - - -	-	-	13	8	138	86	26	19	4	2	63	49	244	164
June - - - - -	-	-	5	9	129	105	19	23	15	9	49	34	217	180
July - - - - -	-	-	11	1	104	57	9	12	20	6	55	25	199	101
August - - - - -	-	-	1	4	99	70	10	6	21	20	25	18	156	118
September - - - - -	-	-	2	1	93	70	17	16	18	3	41	29	176	119
October - - - - -	-	-	5	4	132	94	5	4	15	4	44	29	201	135
November - - - - -	-	-	2	3	136	111	7	2	12	3	59	57	216	176
December - - - - -	-	-	15	9	200	133	13	13	4	4	16	18	248	180
YEAR - - - - -	1	-	73	47	1,835	1,280	256	206	134	63	578	452	2,877	2,048
RACES.														
Hindoo of caste - - - - -	-	-	40	29	652	463	118	98	28	21	217	158	1,055	769
Hindoo, low caste - - - - -	-	-	-	-	20	13	-	2	-	-	5	1	25	16
Jain - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulman - - - - -	1	-	33	18	1,162	804	133	106	106	42	356	293	1,796	1,263
Parsee - - - - -	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Jew - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	1	-
All Races and Castes -	1	-	73	47	1,835	1,280	256	206	134	63	578	452	2,877	2,048

Ratio 7·8 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Shikarpoor* during the Year 1866.

Reported Population, 650,300. Area—Square Miles, 9,042.	Cholera.		Smal-lpox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1866 :														
January - - - - -	-	-	2	1	32	25	43	21	1	-	39	23	117	70
February - - - - -	-	-	4	3	55	46	6	1	3	1	44	38	112	89
March - - - - -	-	-	3	2	72	59	5	4	2	1	37	25	119	91
April - - - - -	-	-	7	3	64	33	7	3	-	-	21	13	99	52
May - - - - -	-	-	1	2	22	23	21	23	-	1	7	11	51	60
June - - - - -	-	-	4	4	37	29	5	-	2	1	17	9	65	43
July - - - - -	-	-	2	-	28	27	5	1	1	2	10	3	46	33
August - - - - -	-	-	1	-	34	19	2	1	4	1	7	8	48	29
September - - - - -	-	-	-	-	38	30	1	-	1	-	7	13	47	43
October - - - - -	-	-	1	3	63	67	3	-	1	1	17	10	85	81
November - - - - -	-	-	1	-	68	84	2	1	1	-	5	18	77	103
December - - - - -	-	-	-	-	94	79	9	1	-	1	17	21	120	102
YEAR - - - - -	-	-	26	18	607	521	109	56	16	9	228	192	986	796
RACES.														
Hindoo of caste - - - - -	-	-	12	9	326	252	49	37	11	6	141	133	539	437
Hindoo, low caste - - - - -	-	-	1	-	1	-	-	-	-	-	-	1	2	1
Jain - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulman - - - - -	-	-	13	9	280	269	60	19	5	3	87	58	445	358
Parsee - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes -	-	-	26	18	607	521	109	56	16	9	228	192	986	796

Ratio 2·7 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Upper Sind*, during the Year 1866.

Reported Population, 47,955. Area—Square Miles, 2,147.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	-	-	-	-	26	9	10	10	1	-	-	-	37	19
February	- - - -	-	-	-	-	30	28	-	-	1	-	1	2	32	30
March	- - - -	-	-	4	1	12	8	23	14	-	1	-	-	39	24
April	- - - -	-	-	9	4	22	8	7	8	-	-	1	-	39	20
May	- - - -	-	-	4	3	19	12	-	-	1	1	5	5	29	21
June	- - - -	-	-	2	-	13	8	4	2	-	-	14	3	33	13
July	- - - -	-	-	-	-	12	7	10	5	7	1	1	-	30	13
August	- - - -	-	-	3	1	12	1	5	2	1	-	-	-	21	4
September	- - - -	-	-	-	-	15	13	3	3	1	-	-	-	19	16
October	- - - -	-	-	-	-	26	20	9	8	-	-	-	-	35	28
November	- - - -	-	-	-	-	38	33	1	2	-	1	-	-	39	41
December	- - - -	-	-	-	-	24	28	5	3	-	1	-	-	29	32
YEAR	- - -	-	-	22	9	249	180	77	57	12	5	22	10	382	261
RACES.															
Hindoo of caste	- - -	-	-	9	4	82	82	18	10	1	1	13	6	123	103
Hindoo, low caste	- - -	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Jain	- - -	-	-	-	-	6	1	-	-	-	-	-	-	6	1
Moosulman	- - -	-	-	12	5	161	97	59	47	10	4	9	3	251	156
Parsee	- - -	-	-	1	-	-	-	-	-	-	-	-	-	1	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	-	-	-	-	1	-	-	-	1	-
Unknown race or caste	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Races and Castes	- - -	-	-	22	9	249	180	77	57	12	5	22	10	382	261

Ratio 13·4 per mille.

DEATHS reported in the CIVIL POPULATION of the Collectorate of *Thur and Parkur* during the Year 1866.

Reported Population, 127,035. Area—Square Miles, 13,000.		Cholera.		Small-pox.		Fever.		Bowel Complaint.		Accident or Violence.		Other Causes.		All Causes.	
1866:		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
January	- - - -	-	-	-	-	67	53	8	2	1	-	-	1	69	56
February	- - - -	-	-	5	7	79	68	2	5	-	-	-	1	86	61
March	- - - -	-	-	-	-	41	30	1	-	-	-	7	8	49	38
April	- - - -	-	-	2	3	92	20	8	7	-	1	1	2	43	33
May	- - - -	-	-	-	2	14	9	4	3	-	-	8	2	26	16
June	- - - -	-	-	-	-	17	13	3	2	3	-	8	5	31	20
July	- - - -	-	-	-	-	15	12	1	1	-	1	1	4	17	18
August	- - - -	-	-	1	-	14	9	-	-	2	4	5	1	22	14
September	- - - -	-	-	-	-	1	7	-	-	-	1	-	-	1	8
October	- - - -	-	-	-	-	5	2	1	-	1	-	-	-	7	2
November	- - - -	-	-	-	-	5	3	-	-	-	-	-	-	5	3
December	- - - -	-	-	-	-	13	6	1	-	2	-	-	-	16	6
YEAR	- - -	-	-	8	12	296	232	29	20	9	7	30	24	372	295
RACES.															
Hindoo of caste	- - -	-	-	2	1	131	109	5	4	2	4	18	9	158	127
Hindoo, low caste	- - -	-	-	5	6	57	31	1	2	1	1	4	8	68	48
Jain	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moosulman	- - -	-	-	1	5	106	92	21	13	5	2	8	7	141	119
Parsee	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jew	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christian	- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown race or caste	- - -	-	-	-	-	2	-	2	1	1	-	-	-	5	1
All Races and Castes	- - -	-	-	8	12	296	232	29	20	9	7	30	24	372	295

Ratio 5·2 per mille.

RETURN of CASUALTIES by VIOLENCE among the CIVIL POPULATION, reported by the Superintendents of Police in the different Collectorates of the Bombay Presidency during the Year 1866.

	Murder.				Homicide.				Suicide.				Persons.	Persons.	Persons.	Persons.	Accidental Deaths.								Found Dead, Cause Uncertain.			TOTAL.	Attempted Suicide.								
					By Drowning.				By other Means.								Died from Hydrophobia.	Killed by Snake-bite.	Killed by Wild Beasts.	By Drowning.				In Sea or other known Cause.	Cause Uncertain.												
																				By Drowning.																	
																				In Well.		In Tank.											Men.		Women.		Children.
Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.																							
Tanna	13	2	—	—	4	7	2	—	5	6	12	50	—	—	—	22	72	10	8	6	68	103	7	1	—	405	—	—	—	—	—	—	—	—	—		
Surat	10	4	2	—	11	16	1	5	2	1	8	41	14	—	—	7	20	24	1	2	31	49	85	—	—	334	3	—	—	—	—	—	—	—	—		
Kaira	6	—	3	—	15	11	1	—	10	7	—	41	10	—	—	9	12	15	7	2	40	5	81	—	—	276	5	—	—	—	—	—	—	—	—		
Ahmedabad	11	—	—	—	4	12	—	—	8	6	—	32	5	—	—	9	12	6	2	3	34	7	61	1	—	213	—	—	—	—	—	—	—	—	—		
Punch Mahals	9	—	1	—	2	1	1	—	7	2	6	27	1	—	—	4	1	1	—	—	2	1	27	1	—	94	—	—	—	—	—	—	—	—	—		
Khandeish	1	1	1	1	10	16	1	—	4	1	9	15	1	—	—	24	20	19	2	3	7	55	46	2	—	239	1	—	—	—	—	—	—	—	—		
Ahmednugur	5	2	1	—	4	11	—	—	—	2	—	3	—	—	—	13	21	8	—	—	5	15	11	2	—	103	—	—	—	—	—	—	—	—	—		
Poona	2	3	1	4	3	9	—	1	7	4	2	16	4	—	—	18	53	20	2	6	2	54	52	7	2	277	—	—	—	—	—	—	—	—	—		
Sholapoor	2	—	1	4	2	8	—	—	4	1	1	8	3	—	—	21	39	16	—	1	—	12	56	5	—	186	—	—	—	—	—	—	—	—	—		
Nasik	2	3	1	1	1	2	—	—	3	1	—	9	—	—	—	4	10	7	4	—	2	16	20	—	—	87	—	—	—	—	—	—	—	—	—		
Satara	5	4	1	—	4	10	2	1	14	5	15	30	1	—	—	20	38	40	3	1	1	45	57	1	—	299	3	—	—	—	—	—	—	—	—		
Kuladghee	4	3	—	3	3	27	—	5	18	11	—	7	—	—	—	6	23	15	—	—	4	15	57	1	—	202	1	—	—	—	—	—	—	—	—		
Belgaum	11	4	7	2	4	21	2	3	15	10	3	20	—	—	—	13	27	30	3	2	8	21	53	4	—	265	—	—	—	—	—	—	—	—	—		
Dharwar	10	4	5	2	4	17	6	12	21	9	1	16	—	—	—	6	10	1	13	20	29	17	38	6	—	247	—	—	—	—	—	—	—	—	—		
Canara	—	—	—	—	—	3	—	3	3	3	7	26	—	—	—	2	4	21	12	4	5	33	53	3	—	182	—	—	—	—	—	—	—	—	—		
Rutnaghiree	5	2	—	—	2	4	—	2	9	3	—	90	—	—	—	1	13	1	3	4	5	91	46	—	—	281	1	—	—	—	—	—	—	—	—	—	
Kurachee	5	3	—	3	1	1	—	—	5	3	4	73	9	—	—	—	—	3	9	11	27	160	81	—	—	399	—	—	—	—	—	—	—	—	—	—	
Hyderabad	8	2	—	2	—	—	2	1	1	6	3	127	9	—	—	7	—	1	22	5	45	23	90	3	3	361	1	—	—	—	—	—	—	—	—	—	
Shikarpoor	6	8	—	4	—	—	—	—	1	2	—	25	6	—	—	1	1	4	7	3	22	69	51	5	1	217	—	—	—	—	—	—	—	—	—	—	
Upper Sind	—	1	—	—	1	—	—	—	1	—	—	1	5	—	—	—	2	—	1	1	2	—	2	2	1	—	18	—	—	—	—	—	—	—	—	—	
Thur and Parkur	1	—	—	—	—	—	4	—	4	4	—	17	—	—	—	6	1	—	4	—	3	—	137	2	—	186	—	—	—	—	—	—	—	—	—	—	—

GAOLS.

It was recommended that, as the superficial space was restricted by the Government of India to 40 feet per man, prison wards should be only 16 feet wide, which would give 10 feet of wall to two men, or, after deducting $3\frac{1}{2}$ feet for doorway, $6\frac{1}{2}$ feet. Construction.

With a view to a more correct exhibition of the sickness and mortality among prisoners, a representation was made to Government that it was desirable that instances of the release of prisoners on the score of health, before the period of their sentences had expired, should be noted in the returns, and the proposition was forwarded to the medical department for adoption. Statistics.

Kaira.—There was much sickness and large mortality from fever in this gaol.

Ahmedabad.—A reference regarding the large sickness and mortality in this gaol was made by Government early in the year, upon which the Commission visited Ahmedabad and made a special report.

In January and February the sickness continued great, after which the general health seems to have much improved. Eleven deaths occurred in January, and 15 in the following three months.

Hyderabad.—There has been much sickness and a very large mortality in this gaol for two years. January and February were here too the most sickly months. Fever and bowel affections prevailed to a great extent, and 67 deaths occurred among some 400 men in those two months. Afterwards the health of the prisoners seems to have rapidly improved and become satisfactory.

Yerowda.—The great sickness and mortality in this gaol, among the prisoners who were natives of Guzerat, attracted notice, and led to the prisoners, who had been brought from that province for employment on the works at Yerowda, being returned to Ahmedabad.

SICKNESS and DEATHS in GAOLS in 1866.

GAOLS.	Average Number of Prisoners.	Daily Number of Sick.	Admissions into Hospital during the Year.	Deaths from all Causes.	DEATHS FROM										Death from all Causes per Mille.
					Cholera.	Smallpox.	Fever.	Dysentery.	Diarrhoea.	Hepatitis.	Icterus.	Scorbutus.	Phthisis.	Atrophia.	
Bombay - - - - -	407	14	474	4	-	-	2	-	2	-	-	-	-	-	9.8
Surat - - - - -	157	4.4	177	12	-	-	5	1	3	-	-	-	-	1	76.6
Kaira - - - - -	201	25	677	33	-	-	14	3	9	1	-	-	-	2	164.2
Ahmedabad - - - - -	394	28.4	674	35	1	-	28	-	-	-	-	-	1	1	89.08
Rajkote - - - - -	60	8.4	226	1	-	-	-	-	-	-	-	-	-	-	16.6
Dohud - - - - -	194	12.1	422	12	-	-	3	1	3	-	-	-	-	1	61.9
Dhoolia - - - - -	245	13.8	271	6	-	-	-	-	-	1	-	-	1	1	24.25
Ahmednugur - - - - -	187	8.7	272	8	1	-	1	1	2	-	-	-	-	1	42.2
Poona - - - - -	415	10.6	338	13	2	-	3	-	5	-	-	-	-	-	31.3
Satara - - - - -	134	4.8	133	5	-	-	3	-	-	-	1	-	-	1	37.3
Kolhapoor - - - - -	136	4.7	130	4	1	-	-	2	-	-	-	-	-	-	29.4
Sholapoor - - - - -	122	8.6	209	1	-	-	1	-	-	-	-	-	-	-	8.2
Kuladghee - - - - -	162	6.3	257	3	-	-	-	-	-	-	-	-	1	-	18.5
Dharwar - - - - -	475	11.3	278	21	-	-	6	2	2	-	1	-	-	8	44.2
Honore - - - - -	35	1.3	59	-	-	-	-	-	-	-	-	-	-	-	-
Sawuntwaree - - - - -	38	2.7	57	-	-	-	-	-	-	-	-	-	-	-	-
Rutmaghree - - - - -	212	13.2	366	14	-	-	9	-	-	-	-	-	-	-	66.0
Tanna - - - - -	287	17.9	550	9	-	-	1	3	-	-	-	1	1	1	31.4
Kurachee - - - - -	637	28.6	660	19	-	-	10	-	3	-	-	-	-	-	29.8
Hyderabad - - - - -	324	11.4	447	78	-	-	28	25	16	-	2	-	-	1	240.7
Shikarpoor - - - - -	524	19.7	663	33	-	-	11	2	1	-	-	-	1	1	63.0
Aden - - - - -	167	7.9	334	3	-	-	-	-	-	-	-	-	-	1	18.0
TOTAL - - -	5,513	263.8	7,674	314	5	-	125	40	46	2	4	1	6	20	56.9
SUBSIDIARY GAOLS, GANGS, AND LOCK-UPS :															
Yerowda - - - - -	851	61.3	1,926	177	-	-	82	14	38	-	8	1	-	20	208.0
Belgaum - - - - -	58	1.4	37	-	-	-	-	-	-	-	-	-	-	-	-
Karwar - - - - -	132	7	257	1	-	-	1	-	-	-	-	-	-	-	7.6
Sukur - - - - -	318	33.6	1,097	29	-	-	18	2	-	-	-	-	-	-	91.2
Thur and Parkur - - - - -	177	6.7	317	2	-	-	2	-	-	-	-	-	-	-	11.3
Mitrow Canal - - - - -	96	5.4	227	9	-	-	7	-	-	-	-	-	-	-	93.7
Sadra - - - - -	6	0.4	20	1	1	-	-	-	-	-	-	-	-	-	166.7
TOTAL - - -	1,638	115.8	3,881	219	1	-	110	16	38	-	8	1	-	20	133.7

MISCELLANEA.

THE only change in the constitution of the Commission during the year was Commission. in the office of secretary, the duties of which were relinquished by Dr. Beatty and assumed by Dr. Gordon Asher in May.

The places noted in the margin were visited by the Commission during the year, and the reports rendered to Government form part of the Appendix. Inspections. Ahmedabad, Baroda, Bulsar and Teethul, Tanna and Kurachee.

It having been found that time and labour were sometimes wasted in the preparation, on standard designs, of plans, which were rejected as insuitable to the requirements of this Presidency, Government adopted the practice of forwarding to the Commission, for report, standard plans received from the Government of India. Those noted in the margin were reported on, and the remarks were printed and circulated with the plans for the information and guidance of departments. Standard Plans. Hospital Guard room. Lunatic Asylum. Voluntary Work shops. Hospital Stables.

The services of the President were made avail of in special committees convened to consider the subjects as follows : President.

Bombay drainage outfall.

Sites and plans for hospitals at Bombay.

Site for a convict gaol, Bombay.

Site for barracks at Kirkee.

Site for a military prison at Paunchgunnee.

Investigation into the health of prisoners from Guzerat at Yerowda.

Opportunity was taken of recommending to Government that the period of observation of rain-fall should be extended from the middle of May to the middle of November at all places where records of the rain-fall are kept, and where practicable, as at railway stations, that observations should extend throughout the year. Government approved of the proposal, and issued instructions accordingly. Meteorology.

APPENDIX.

APPENDIX I.—BARRACK DISTRIBUTION RETURN.

DIVISION OF THE ARMY.	STATION.	LINES.	CORPS.	Description of Barrack Dormitory Accommodation.	Number of Single Men for whom there is Accommodation.	Staff Serjeants' Quarters.		Family Quarters.		Library or Reading Room.	Gymna- sium.	Recreation. Room.	Theatre.	Workshops.
						Number and Class.	Description.	No.	Description.					
BOMBAY BRIGADE	Colaba - -	Infantry - - -	Head Quarters, Wing, 4th K. O. Regiment.	6, single storied (con- demned).	330	2 A.	Permanent	40	Semi-perma- nent.	1	-	-	-	One old library.
		Sanitarium - - -	Sanitarium - - -	2, single storied (tempo- rary).	88	1 A.	ditto	12	Temporary	1	-	-	-	-
POONA DIVISION	Khandalla - -	Old Depôt - - -	Unoccupied - - -	2, single storied - - -	146	2 A.	ditto	-	-	-	-	-	-	-
	Poona - -	Horse Artillery -	109th Regiment - -	1, upper storied (both occupied).	72	5 A.	ditto	20	Temporary	One, used by Normal School.	-	-	-	Part of gun- shed used.
		R. F. Infantry, Wanowree.	96th Regiment, Head Quarters, and eight Companies.	6, single storied (con- demned).	102	1 B.	-	9	ditto.	-	-	-	-	-
		L. F. Infantry, Ghore- pooree.	45th Regiment - -	8, upper storied (both occupied).	488	2 A.	ditto	80	Permanent	-	-	One, tempo- rary.	-	ditto
		Depôt, Wanowree -	109th Regiment - -	24, semi-permanent, single storied.	684	5 A.	ditto	80	ditto	Portion of School. One, with Schoolroom.	-	-	-	1
		General Depôt - - -	General Depôt - - -	5, temporary, single storied (new).	210	10 B.	-	-	-	-	-	-	-	-
		No particular lines -	109th Regiment - -	11 } 24 men each, con- demned barracks -	264 } 24 } 24 }	2 B.	Condemned	20	Temporary	1	-	-	-	-
	Kirkee - -	Sappers - - -	Sappers and Miners -	5, new, temporary - -	210	1 A.	Permanent	26	Permanent	1	-	-	-	1
		Artillery - - -	Head Quarters, E. Brigade	2, ditto - ditto - -	84	2 A.	ditto	80	ditto	1	-	-	Barrack used (one of the 24).	1
		Artillery - - -	3 F. Batteries - - -	2, ditto - ditto - -	104	7 B.	-	-	-	-	-	-	-	-
	Nuggur - -	Cavalry - - -	2 Garrison Batteries -	11, temporary (old) - -	286	2 A.	ditto	80	ditto	Serjeants' mess used.	-	-	1	1
		Artillery - - -	3rd Dragoon Guards -	Occupy three of the cavalry barracks.	12	1 B.	ditto	7	Temporary	-	-	-	-	-
	Sholapoor - -	Artillery - - -	B. Battery, E. Brigade, R. H. A.	3, permanent - - -	84	2 A.	ditto	14	ditto	-	-	-	-	-
		Artillery - - -	E. Battery, 18th Brigade, R. A.	1, temporary - - -	21	1 B.	-	5	Permanent.	-	-	-	-	-
	Sattara - -	Infantry - - -	4th K. O. Regiment, three Companies.	4, permanent - - -	84	2 A.	ditto	24	ditto	An old bar- rack used.	-	-	-	-
	Aseerghur - -	Infantry - - -	1, semi-permanent - -	1, upper storied (Hill Fort).	48	-	-	-	-	-	-	-	-	-
		Infantry - - -	1, temporary - - -	-	50	-	-	-	-	-	-	-	-	-
MHOW DIVISION	Poorundhur - -	Sanitarium - - -	Sanitarium - - -	4, permanent - - -	103	1 A.	Permanent (can- teen under same roof).	12	Permanent	1	-	-	-	-
	Mhow - -	Artillery - - -	Head Quarter, 21st Bri- gade.	2, permanent - - -	168	2 A.	Permanent	6	ditto	Orderly-room used.	-	-	-	-
		Cavalry - - -	1 F. Battery - - -	-	-	-	-	7	Temporary.	-	-	-	-	-
		Cavalry - - -	1 G. Battery - - -	2, temporary - - -	80	18 B.	ditto	50	Permanent	Barrack-room used.	-	-	-	1
		Infantry - - -	11th Hussars - - -	2, upper storied (both occupied).	320	-	-	-	-	-	-	-	-	-
	Neemuch - -	Infantry - - -	95th Regiment, nine Com- panies, with Head Quarters.	3, upper storied (both occupied).	480	14 B.	ditto	86	ditto	ditto	Barrack- room used.	-	Two, barrack- room used.	2
		Artillery - - -	F. Battery, 18th Brigade, R. A.	2, permanent - - -	128	4 A.	ditto	15	ditto	ditto	-	-	-	1
		Infantry - - -	96th Regiment, two Com- panies.	8, permanent (condemned)	424	5 A.	ditto	30	Temporary	-	-	-	-	1

A P P E N D I X.

APPENDIX I.—BARRACK DISTRIBUTION RETURN.

Skittle-alleys.	Fives Court.	Plunge Baths.	Canteens.	Guard Rooms.	School Rooms.	Serjeants' Mess.	Officers' Quarters.	Hospital.	Female Hospital.	Quarters for Hospital Serjeant, Steward, Apothecary, Assistant Apothecary, &c.	Hospital Guard Room.	Cells.	Present Strength of Married and Single Rank and File, including Sick in Hospital, and Men on Guard Duty.	REMARKS.
2	1	-	One, with coffee room and store-room.	One, 13 men	One, old church	One, with orderly room.	22	One, 76 beds	One, 8 beds	3	One, 4 men	10	450	
-	-	-	One, with store-room.	One occupied by staff serjeant.	-	-	2	One, 48 beds	One, 12 beds	2	-	Three, used as guard-room.	67	
-	-	-	1	-	-	-	1	One 12 beds	-	-	-	6		
-	1	One, no water	1	One, 10 men One, 6 men	1	1	-	One, 12 beds	One, 4 beds	3	-	6	768	Cubic space of the upper-storied barrack insufficient. 474 men accommodated elsewhere (see depôt and new temporary barracks).
1	1	-	1	One, 9 men One, 5 men	One, used also as library and theatre.	One, used also as orderly-room.	-	One, 70 beds	One, 6 beds	2	One, 7 men	8	566	84 men accommodated elsewhere.
3	1	1	1	One, 8 men One, ditto. One, 7 men.	One, with library	- ditto -	-	One, 60 beds	One, 8 beds	3	One, 12 men	12	751	Cubic space of the 24 barracks insufficient.
-	-	-	One, used as orderly-room.	One, 10 men	1	-	-	One, 60 beds	One, 8 beds	3	One, 4 men	12		
-	-	-	1	One, 4 men	1	1	-	One, 6 beds	One, 4 beds	-	-	-	None.	
-	1	1	1	One, 7 men One, 4 men.	1	1	-	One, 80 beds	One, 6 beds	3	One, 4 men	12	486	
1	1	1	1	One, 25 men	-	1	-	One, 49 beds	One, 8 beds	2	One, 9 men	5	353	
-	-	1	-	One, 4 men	1	-	-	One, 25 beds	One, 13 beds (isolation ward).	1	-	3	121	Accommodated in three of the 12 cavalry barracks.
1	1	-	One, with coffee shop.	One, 12 men	One, with library	1	-	One, 16 beds	One 5 beds	1	One, 4 men occupied by hospital serjeant.	Quarter-guard veranda, 3.	125	
1	-	1	An old barrack used.	One, 4 men	An old shed used	An old shed used	-	One, 16 beds	-	1	One, 3 men ; occupied by hospital serjeant.	2	205	
1	-	-	1	One, 7 men	-	-	-	One, 0 beds	-	-	-	2	100	
-	-	-	One, with staff serjeant's quarters.	One, 6 men	-	-	-	One, 48 beds	One, 6 beds	1	One, 4 men ; occupied by apothecary.	2	61	
One, used as ration shed.	1	-	Shoeing-shed used	One, 5 men	-	Portion of old stable.	-	One, 32 beds	One, 4 beds	1	-	2	170	Includes eight non-commissioned officers' rooms.
-	-	-	1	One, 6 men	1	1	-	One, 30 beds	One, 8 beds	1	One, 4 men	Two in quarter-guard ; 3 condemned.	392	Including 16 non-commissioned officers' rooms, and excluding enclosed east verandas, which give space for 128 men at 90 feet each.
Verandas of canteen used.	-	One for four men, 600 yards from barracks.	1	One, 24 men	A Barrack-room used.	Barrack veranda rooms used.	-	One, 130 beds	One, 27 beds	3	One, 4 men	Four in quarter-guard.	*669	* Including 24 non-commissioned officers' rooms, and excluding enclosed east verandas, which give space for 192 men at 90 feet each.
1	-	1	Barrack - room used.	One, 4 men	- ditto -	Staff Serjeants' quarters used.	-	One, 32 beds	-	-	-	-	109	
-	-	1	-	One, 7 men	-	-	-	One, 44 beds (Residency hospital).	-	-	One, 3 men (Residency hospital).	12	147	

APPENDIX I.—BARRACK DISTRIBUTION RETURN—*continued.*

DIVISION OF THE ARMY.	STATION.	LINES.	CORPS.	Description of Barrack Dormitory Accommodation.	Number of Single Men for whom there is Accommoda- tion.	Staff Serjeants' Quarters.		Family Quarters.		Library or Reading Room.	Gymna- sium.	Recreation Room.	Theatre.	Workshops.
						Number and Class.	Description.	No.	Description.					
MHOW DIVISION— <i>continued.</i>	Nuseerabad	Artillery - - -	F. Battery, 14th Brigade, R. A.	1, permanent - -	112	1 A. -	Permanent -	8	Permanent -	With school- room.	-	-	-	-
		Infantry - - -	2nd Battalion, 1st Regi- ment, nine Companies, with Head Quarters.	5, condemned - - 2, ditto - - - 16, permanent - - 1, temporary (in cavalry lines).	250 88 320 100	2 B. 5 A. -	- ditto - -	80	- ditto -	In an old barrack.	-	-	-	N. Cavalry quarter- guard used.
	Indore	Infantry - - -	95th Regiment, one Com- pany.	1, permanent - -	80	- -	- -	-	- -	Part of bar- racks.	-	-	-	-
NORTHERN DIVI- SION.	Ajmere	Infantry - - -	2nd Battalion, 1st Regi- ment, one Company.	Gun-shed - - -	54	- -	- -	-	- -	-	-	-	-	-
	Ahmedabad	Artillery, Right Flank - - -	Head Quarters, 14th Bri- gade. D. Battery, 14th Brigade, R. A., and B. Battery, 18th Brigade, R. A.	2, semi-permanent - 1, permanent (new) - 1, semi-permanent - 1, permanent - -	122 20 61 20	3 B. 1 B. -	Temporary - - ditto - -	18 12	Permanent - - ditto -	- -	- -	- -	- -	In old bar- rack.
		Artillery, two Flank Brigade - - -		- - - - -	- - -	1 A. -	Permanent -	-	- -	-	-	-	Temporary, not used.	Gun-shed and stables used.
	Deesa	Artillery - - -	E. Battery, 14th Brigade, R. A.	3, permanent - -	114	2 B. -	- ditto - -	13	Permanent -	-	-	-	-	1
		Infantry - - -	49th Regiment, Head Quarters, and nine Com- panies.	1, permanent for band - 8, permanent for 47 - 3, ditto for 53 - - 3, temporary - - -	17 376 159 75	4 A. -	- ditto - -	94	- ditto -	1, with school- room.	One, used as work- shop.	-	-	Gymnasium used.
	Aboo	Sanitarium - -	Sanitarium, and one Com- pany, 49th.	16, permanent - -	160	2 A. 1 B. -	- ditto - -	24	- ditto -	1, with coffee- room.	-	-	-	-
	Baroda	Artillery - - -	Division, D. Battery, 14th Brigade.	2, condemned - -	88	2 B. -	- ditto - -	10	- ditto -	-	-	-	-	1
SIND DIVISION	Kurachee	Artillery - - -	Head Quarters, 18th Bri- gade; A. Battery, 18th Brigade, R. A.	3, upper storied (only upper story occupied.)	108	2 A. 5 B. -	- ditto - -	15	- ditto -	In barrack, lower story.	-	-	-	-
		Infantry - - -	33rd Regiment - -	10, single storied - -	710	3 A. 1 B. -	- ditto - -	80	- ditto -	-	-	1	-	1
		Depôt - - -	Depôt - - -	9, ditto - - -	620	2 A. -	- ditto - -	90	- ditto -	-	-	-	-	-
	Ghizree	Sanitarium - -	Sanitarium - - -	2, ditto - - -	114	- -	- -	-	- -	-	-	-	-	-
	Hydrabad	Infantry - - -	G. Battery, 14th Brigade, R. A.; 1st Battalion 2nd Foot, 3rd Company.	12, permanent - -	550	2 B. -	- ditto - -	90	Permanent -	-	-	-	-	-
BELGAUM BRI- GADE.	Belgaum	Artillery - {Fort Camp - - -	5th Battery, 21st Brigade, R. A. C. Battery, 18th Brigade, R. A.	2, permanent - -	70	1 B. -	- ditto - -	9	- ditto -	With Ser- jeants' mess.	-	-	-	-
		- - -		2, ditto - - -	1, 54 1, 50	4 A. -	- ditto - -	16	- ditto -	-	-	-	-	Used as har- ness-room.
		Infantry - - -	26th Regiment - -	8, permanent at 50 - 2, ditto at 54 - - 2, semi-permanent -	400 108 84	3 A. -	- ditto - -	84	- ditto -	Serjeants' mess used.	-	-	-	1
	Kolapoor	Artillery - - -	Unoccupied - - -	2, ditto - - -	72	2 B. -	Temporary -	-	- -	-	-	-	-	-
	Rairee	Sanitarium - -	Detail 26th Foot - -	1, permanent - -	36	- -	- -	-	- -	-	-	-	-	-
ADEN BRIGADE	Aden	Artillery Camp -	Head Quarters, and seven Companies one Bat- talion 2nd Regiment; 1st Battery 21st and 4th Battery 21st Bri- gade, R. A.	2, ditto - - -	52	2 B. -	Permanent -	16	Permanent -	With Ser- jeants' mess.	-	-	-	-
		Infantry, Camp -		2, upper storied (both occupied). 1 old R. A. hospital (occupied by band).	128	3 A. 1 B. -	- ditto - -	36	- ditto -	1	-	-	-	-
		Infantry, Isthmus -		2, ditto (both occupied) -	128	- -	- -	52	- ditto -	Part of Ser- jeants' mess.	-	-	-	-
		Artillery, Steamer Point.		1, ditto (both occupied) -	38	- -	- -	-	- -	-	-	-	-	-
		Infantry, ditto -		2, ditto (both occupied) -	100	- -	- -	24	Permanent -	Part of quar- ter-guard.	-	-	-	-

APPENDIX I.—BARRACK DISTRIBUTION RETURN—continued.

Skittle-alleys.	Fives Court.	Plunge Baths.	Canteens.	Guard Rooms.	School Rooms.	Serjeants' Mess.	Officers' Quarters.	Hospital.	Female Hospital.	Quarters for Hospital Serjeant, Steward, Apothecary, Assistant Apothecary, &c.	Hospital Guard Room.	Cells.	Present Strength of Married and Single Rank and File, including Sick in Hospital, and Men on Guard Duty.	REMARKS.
1	1	1	1	One, 7 men	1	1	-	One, 12 beds	-	2	-	-	122	
2	-	1	N. I. hospital used	One, 16 men	N. Cavalry hospital used.	One of the old temporary barracks.	-	One, 63 beds in barracks, old cavalry lines.	One, 6 beds (canteen).	1	One, 4 men (barrack veranda Cavalry lines).	-	623	
-	-	-	In barrack veranda	-	Two barrack veranda-rooms.	-	-	One, 15 beds	-	Apothecary accommodated in hospital.	-	-	72	Including eight non-commissioned officers' rooms, and excluding east verandas, which gives space for 32 men at 90 feet.
-	-	-	One, part of gunshed.	-	-	-	-	-	-	-	-	-	56	
-	-	-	-	-	-	Staff Serjeants' quarters used.	-	-	-	-	-	-	248	
1	-	Two temporary.	One, and store-room.	One, 11 men	One, orderly-room under same roof.	-	*5	Under same roof: Two wards, 25 beds. One ward, 7 beds.		1	-	6	-	* Occupied by one Assistant Surgeon, one Bandmaster, one Subaltern, one Apothecary, one Staff Surgeon. Cubic space insufficient.
1	1	1	1	One, 7 men	-	-	-	One, 14 beds	One, 5 beds, part of hospital.	-	-	-	119	
-	1	Two for soldiers' garden.	1	One, 15 men	One, with library and coffee-room.	One, with orderly-room.	-	One, 108 beds	One, 10 beds	4	One, 7 men	-	711	The cubic space of eight of the barracks insufficient.
-	-	-	A barrack used	One, 7 men	-	-	2	Two of the barracks used.	-	Live in barracks.	-	2	73	Including 16 non-commissioned officers' rooms.
-	-	-	One, with coffee-shop.	One, 8 men	A barrack used	-	-	One, 80 beds	One, 6 beds	1	-	2	10	
1	1	1	1	One, 5 men	In barrack, lower story.	In barrack, lower story.	-	One, 16 beds	One, 4 beds	2	-	2	119	Cubic space insufficient.
1	1	1	1	One, 18 men	-	1	-	One, 74 beds	One, 12 beds	3	One, 4 men	6	813	
1	-	-	1	One, 15 men	-	1	-	One, 78 beds	One, 8 beds	-	-	4	not known.	
1	-	-	-	-	-	-	6	One, 57 beds (one of the two barracks).	-	1	-	-	10	
-	1	-	-	One, 14 men	-	-	-	One, 86 beds	One, 6 beds	-	-	6	Artillery, 136 } 353 Infantry, 207 }	
1	-	1	One, with quarter-guard.	With canteen	-	With library	-	One, 18 beds	Part of men's hospital.	-	-	2	56	Cubic space of one barrack insufficient.
-	-	-	1	One, 7 men	One, with Serjeants' mess and orderly-room.	With school-room and orderly-room.	-	One, 26 beds, part of Infantry hospital.	Infectious ward, Infantry hospital.	-	-	2	121	Cubic space of smaller barrack insufficient.
One used as dry earth shed.	1	1	-	One, 15 men	-	Reading - room used.	-	One, 120 beds (including 26 with Artillery).	One, 16 beds	1	One, 7 men	6	725	Cubic space of eight smaller barracks insufficient.
-	-	-	1	-	-	-	2	One, 10 beds	-	-	-	-	Strength -	Two officers and 45 men of all ranks.
1	-	-	1	One, 6 men	1	With library	-	-	-	-	-	2	-	
1	1	-	1	One, 12 men	One, with Serjeant's mess.	With school-room	-	One, 34 beds	One, 8 beds	3	-	4	-	
-	-	-	1	One, 4 men	-	1	-	One, 10 beds	-	2	-	4	-	Strength of rank and file: Artillery - 122. Infantry - 493. The married men's quarters at Aden are smaller than the standard plan.
-	-	-	Part of quarter-guard.	One, 4 men	Part of quarter-guard.	-	-	-	-	-	-	4	-	
-	-	-	1	One, 7 men	-	Part of canteen	-	-	-	-	-	4	-	

APPENDIX II.

LIST of WORKS of CONSTRUCTION, ADDITIONS, and ALTERATIONS, Completed or in Progress during 1866, in BARRACKS and HOSPITALS, in connection with the Accommodation, Health, or Comfort of the TROOPS.

KIRKEE.

Constructing matron's and assistant matron's quarters, with cook-rooms - - -	Completed.
Constructing 11 temporary urinaries - - -	- ditto.
Improving the floors of seven barracks - - -	- ditto.
Constructing quarters for an apothecary within the compound of the hospital - - -	In progress.
Making alterations and improvements in the hospital for females - - -	Completed.
Completing additions and alterations to the library - - -	- ditto.
Paving with cut-stones the floors of the library - - -	In progress.
Making certain improvements to the buildings, as recommended in the Sanitary Commission's Report for 1864, pages 206, 209, and 210, paragraphs 1, 2, 3, 24, 25, 29, 33, 34, 35, 38, 40, 41, and 42 - - -	- ditto.
Erecting a detached building on the north side of the hospital, to contain a surgery, dispensary, apothecary's and waiting rooms - - -	- ditto.
Making additions and alterations to 11 of the barracks - - -	- ditto.
Constructing three additional gun and waggon sheds, and three storerooms - - -	- ditto.
Providing lamp-hooks and brackets in the barracks - - -	Completed.
Providing and fixing wooden shelves and pegs in the gun-shed storeroom - - -	- ditto.
Constructing temporary quarters, guard-room, two solitary cells, and two latrines, for Sappers and Miners - - -	- ditto.
Constructing lines for His Excellency the Governor's Body Guard - - -	In progress.

POONA.

Improving the ventilation of the hospital serjeant's quarters of the General Depôt - - -	Completed.
Constructing a cut-stone range in the kitchen of the General Depôt Hospital, with iron bars in the front and rear - - -	- ditto.
Constructing family quarters, with subsidiary buildings, for the Sappers - - -	- ditto.
Constructing 14 temporary barracks - - -	In progress.
Adding a room to the hospital serjeant's quarters, General Depôt - - -	Completed.
Erecting three temporary sheds for the accommodation of second-class servants attached to the General Depôt Hospital - - -	- ditto.
Erecting wash-houses for the temporary barracks - - -	- ditto.
Adding a veranda on the sides of the ward for females at the Depôt Hospital - - -	In progress.
Constructing 14 urinaries for the use of the barracks in General Depôt - - -	Completed.
Constructing two temporary latrines in the General Depôt lines - - -	- ditto.
Providing ventilator roof to the three cook-rooms in the Depôt lines - - -	- ditto.
Making additions to the Cavalry Hospital - - -	- ditto.
Making certain alterations to the hospital occupied by the 22nd Regiment, N.I. - - -	- ditto.
Constructing temporary quarters for hospital assistant and servants of Her Majesty's 22nd Regiment, N.I. - - -	In progress.
Making certain additions to the building now used as a storeroom of the 22nd Regiment, N.I. - - -	Completed.

POONA--continued.

Constructing sheds for carts at the hospitals at Ghorepooree, Right Flank, Wanowree, and the General Depôt, and at Kirkee - - -	Completed.
Adapting the latrines of all barracks at Ghorepooree, Wanowree, and Kirkee, to dry-earth conservancy - - -	In progress.

WANOWREE.

Providing sunshades to the doors and windows of the barracks - - -	Completed.
Completing the flooring on the upper story of the Artillery Barracks - - -	- ditto.
Constructing separate watershed for the Artillery Hospital - - -	- ditto.
Improving the ventilation of the privies of wash-houses in the Infantry Hospital - - -	- ditto.
Putting two iron-barred windows and shutters in each of the gunshed storerooms - - -	- ditto.
Constructing two barracks, family quarters, and subsidiary buildings - - -	- ditto.
Constructing family quarters for nine families - - -	- ditto.
Making certain alterations to the new ranges of patcheries - - -	- ditto.
Erecting a recreation-room - - -	In progress.
Providing sunshades to the doors and windows of the barracks - - -	Completed.
Providing for temporary patcheries with out-houses - - -	-
Constructing a veranda on the east side of the Infantry Hospital - - -	Completed.
Altering and improving the public military buildings (<i>vide</i> pages 194 and 195, paragraphs 31, 32, 33, 40, 42, 43, 44, 46, 47, 48, 49, 51, 52, 53, and 54 of Sanitary Commission's Report for 1864 - - -	- ditto.
Constructing and fitting up arm-racks and shelves, &c., in the temporary barracks - - -	- ditto.
Improving the ward for females in the Right Flank Hospital - - -	In progress.
Enclosing a portion of the veranda of the infantry quarter guard-room - - -	Completed.
Constructing four urinaries for two new upper-roomed barracks - - -	- ditto.
Making iron eave gutters to nine family quarters - - -	- ditto.
Erecting temporary ablution-room at the cells - - -	- ditto.
Laying plank floor for lock-up and cells of the quarter guard - - -	- ditto.

GHOREPOOREE.

Planking the roof, and fitting arm-racks in the armourer's shop - - -	Completed.
Constructing quarter guard and defaulters' room - - -	Quarter guard completed.
Making additions and alterations to the hospital - - -	Completed.
Paving with stone the floors of twelve old barracks - - -	- ditto.
Improving the drainage of the barracks - - -	- ditto.
Improving the married men's quarters and subsidiary buildings - - -	- ditto.
Improving the drainage of the hospital and its subsidiary buildings - - -	Nearly completed.
Paving with stone the floors, and providing teak wood shelves, in the surgery lately erected on the south side of the hospital - - -	Completed.

GHOREPOOREE--continued.

Constructing and fitting up arm-racks and shelves, &c., in the temporary barracks	Completed.
Improving the hospital and its subsidiary buildings	In progress.
Improving the female hospital	- ditto.
Improving the hospital guard-room	- ditto.
Supplying iron receptacles to the cook-houses in the family quarters	Completed.
Enclosing three open pendalls for hospital servants at the hospital	- ditto.
Putting new ventilators under eaves of the main rooms of the new quarter guard	- ditto.
Constructing an experimental cooking-stove	- ditto.

POORUNDHUR.

Rebuilding barrack destroyed by fire	Completed.
Constructing apothecary's quarters	- ditto.
Constructing apprentices' quarters	- ditto.
Constructing cook-rooms to barracks, Nos. 1 and 4	- ditto.
Paving and improving ventilation of cook-rooms	- ditto.
Constructing latrines to barracks, Nos. 1 and 4	- ditto.
Paving with cut-stone out-offices to barracks, Nos. 1 and 4	- ditto.
Altering latrines for dry conservancy, and constructing one urinary; removing bath-room from corner of barracks, and providing non-commissioned officers' quarters	In progress.
Constructing iron cowl ventilators	Completed.
Facing window-sills of barracks, Nos. 1 and 4, with stone	- ditto.
Constructing bakery	In progress.
Constructing fives-court	- ditto.
Constructing skittle-shed	- ditto.
Constructing hospital servants' quarters	- ditto.
Paving soldiers' library with cut-stone	Completed.
Paving barrack, No. 2, with cut-stone	In progress.
Constructing a latrine to female hospital	- ditto.

SATARA.

Constructing lavatories and four latrines to permanent barracks	Completed.
Improving plunge bath	- ditto.

Temporary Barracks.

Constructing shed for ambulances	- ditto.
Fitting arm-racks and improving ventilation in patcheries	- ditto.
Improving skittle alley	- ditto.
Placing raised sinks to old cook-houses	- ditto.
Altering latrines for dry conservancy	- ditto.
Constructing a cook-house	- ditto.
Constructing urinal to quarter-guard lavatory	In progress.
Making a veranda addition to arsenal guard room	Completed.
Placing gratings in washhouses	- ditto.
Constructing a manure yard	- ditto.

SHOLAPOOR.

Artillery.

Constructing a temporary barrack	Completed.
Paving with stone the lavatories in barracks	- ditto.
Putting raised sinks in cook-room verandas	- ditto.
Making alterations to privies	- ditto.
Putting wooden gratings in wash-houses	- ditto.
Constructing roof-ventilators to hospital	In progress.
Improving the cook-room in hospital	- ditto.
Improving the latrines in hospital	- ditto.

Native Infantry and Cavalry.

Constructing latrines	- ditto.
-----------------------	----------

AHMEDNUGUR.

Artillery.

Erecting a hospital ward for females	Completed.
Erecting an assistant apothecary's quarters and outhouses	- ditto.
Putting up two screen walls in the barracks	- ditto.
Making watertight the patcheries	- ditto.
Paving the floor of the privy	- ditto.
Making double tiled roof to the hospital store-room	- ditto.
Making bath-rooms in the temporary patcheries	- ditto.
Constructing new barracks	In progress.
Making alterations to the hospital for females	- ditto.
Making alterations and additions to one of the temporary barracks, to convert it into a quarter-guard detention room, and cells	- ditto.

Cavalry.

Paving twelve barracks	Completed.
Making additions and alterations to the cook-rooms	In progress.
Making drainage arrangement in the barrack floors	Completed.
Erecting seven stables for 500 horses	- ditto.
Removing a partition in the present quarter-guard	- ditto.
Forming two staff sergeants' quarters in the front row of the patcherry	- ditto.
Converting two centre quarters of one of the married men's barracks into a day-room for the women	- ditto.
Constructing quarter-guard and cells, &c., with outhouses	In progress.
Constructing hospital guard	- ditto.
Putting ceiling-cloth into patcherry, which is converted into staff sergeants' quarters	Completed.
Making alterations and additions to the latrines at the foot of the horse lines	- ditto.
Paving the cook-rooms of the hospital	- ditto.
Putting up pegs and shelves in the saddlers' shop	- ditto.
Paving with stone the side rooms for 12 sergeants' quarters	In progress.
Paving the rooms of the workshop	Completed.
Substituting glazed windows for 12 shutters, also providing ceiling-cloth to serjeant major and quartermaster serjeant's quarters	- ditto.
Building a small chupper shed for meteorological instruments in the hospital compound	- ditto.
Putting ceiling-cloth and saddle-racks into staff sergeants' quarters in the patcheries	- ditto.
Paving canteen	In progress.
Paving the floors of the two hospital latrines, and constructing ventilation to the roof of the same	- ditto.
Fixing five doors in the five staff sergeants' quarters in Nos. 1 and 4 ranges of the patcheries	- ditto.
Making bamboo gratings in the rear doors of the ranges of the patcheries Nos. 2 and 3, now occupied by single men	- ditto.

Native Troops.

Constructing 2nd class hospital servants' quarters	Completed.
--	------------

Cantonment.

Repairing suspension bridge over the Ahmednugur fort ditch	In progress.
--	--------------

ASEERGHUR.

Infantry.

Addition and alteration to the solitary cells	June 1866.
Addition and alteration to the bathroom in new barracks	December 1866.
Constructing new bath-room for Musjid barracks	December 1866.

ASEERGHUR—*Infantry*—continued.

Altering privy seats according to the new plan for dry-earth conservancy - - - - -
Constructing earth shed for Musjid barracks - - - - -
Making ridge ventilator to the quarter-guard new barracks - - - - -
Constructing cemetery - - - - -

Native Infantry.

Double tiling the hospital - - - - -
Addition and alteration to the privy for the hospital - - - - -
Cleaning Sepoys' tank - - - - -

BELGAUM.

Artillery.

Constructing stables - - - - -
Constructing two new staff serjeants' quarters
Sinking a well for the use of the battery horses in camp - - - - -
Constructing temporary latrines in camp - - - - -
Putting sinks in cook-rooms - - - - -
Making a stone pavement for the wheel of the gun-carriage in the gun sheds - - - - -
Erecting new temporary family quarters - - - - -
Making a drain in the barrack ranges in fort -
Putting down one of the two large latrines in rear of the eastern barracks, and re-erecting two smaller latrines, &c., in the compound of the garrison battery in fort - - - - -
Constructing three temporary barracks on permanent plinths - - - - -

Constructing two purely temporary barracks - - - - -

Constructing five cook-houses - - - - -

Constructing five wash-houses - - - - -

Constructing one latrine - - - - -

Constructing urinaries - - - - -

Putting up eaves' gutters - - - - -

Erecting urinaries for the barracks and hospitals - - - - -

Infantry.

Constructing bath-rooms to all existing wash-houses in the fort and camp - - - - -
Putting sinks in the cook-rooms in the fort and camp - - - - -
Erecting temporary dry-earth sheds in the fort and camp - - - - -
Making alterations to the seats of latrines in the fort and camp - - - - -
Carrying out petty (drainage) works in the barrack ranges in the fort and camp - - - - -
Partitioning the pendalls occupied by the 2nd class hospital servants attached to the European Hospital - - - - -
Fitting up one of the detached cells near the quarter-guard, to receive the small quantity of ammunition for the 26th Cameronians - - - - -
Erecting 29 temporary urinaries for the barracks and hospital - - - - -
Improving barrack square - - - - -
Erecting nine temporary detached wash-houses
Altering the hospital privies - - - - -
Constructing a retail shop at the end of the canteen in camp - - - - -

31 August

1866.

30 October

1866.

Completed.

- ditto.

30th October

1866.

15 August

1866.

August 1866.

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

In progress.

Completed.

- ditto.

- ditto.

1 completed;

1 nearly

completed

3 completed;

1 in pro-

gress; 1

discon-

tinued.

- ditto.

Completed.

- ditto.

3 barracks

completed;

1 in pro-

gress.

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

21 completed;

8 in pro-

gress.

In progress.

- ditto.

- ditto.

Completed.

BELGAUM—*continued.**Cantonment.*

Erecting two sheds for carts - - - - -
Altering the camp privies for dry conservancy - - - - -
Draining low ground near camp - - - - -

In progress.

- ditto.

Completed.

MHOW.

Artillery.

Improving artillery cells - - - - -
Placing two iron-barred windows in the artillery guard-room - - - - -
Putting two windows on the west end walls of each temporary barracks - - - - -
Removing partition wall of the west end of the Royal Artillery Hospital, and putting two windows into the western outer walls of both wards - - - - -
Making stone floors and masonry platforms in the wash-sheds of the Royal Artillery - - - - -
Sinking a well for Royal Artillery - - - - -
Constructing a temporary hospital for females of the Royal Artillery - - - - -
Erecting a wall round the graves of the Royal Artillerymen buried at Senawad and Hursoora - - - - -
Partitioning off the south end of three of the temporary barracks used for barrack stores, and fitting up some as a temporary female hospital for the Royal Artillery - - - - -
Piercing, and fitting with honeycomb tiling, two windows in the north wash-shed - - - - -
Building up nine archways, and constructing two common doors and five wooden grated windows in a block of stables, to form a forge for 21st Brigade Royal Artillery - - - - -
Putting in three wooden grated windows, building up three archways, and adding a veranda in front of the block of stables used as a workshop - - - - -
Fixing hooks and punkahs in the artillery barracks - - - - -
Fixing hooks and punkahs in the hospital - - - - -
Fitting up wooden seats to the north privy - - - - -
Fixing ceiling, glazed windows, and ridge ventilators to barracks - - - - -
Erecting temporary cook-houses, lavatory, and latrines for the use of non-commissioned officers and men - - - - -
Building flues over the hearths of cook-room - - - - -
Constructing hospital cart sheds - - - - -
Constructing private ablution rooms, and improving a wash-house - - - - -
Fixing shelves in the medical office - - - - -
Constructing a masonry drain round the well near the Royal Artillery Hospital - - - - -
Removing temporary quarter-guard and gram-room - - - - -
Constructing water cistern and channels for watering tatties at the hospital - - - - -
Repairing well on the east side of the artillery horse lines, and fitting up a moat to the same - - - - -
Constructing chimneys, and making sundry improvements to the cook-houses - - - - -
Erecting verandas in front of the library and reading-room - - - - -
Deepening well, north of artillery lines - - - - -
Fixing two glazed windows in the guard room - - - - -
Erecting a screen in the hospital wash-house - - - - -
Constructing forty married men's quarters - - - - -
Filling up pits near the barracks - - - - -
Constructing new doors and windows to the bomb-proof barracks - - - - -
Erecting two urinaries - - - - -

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

Mhow—continued.

Cavalry.

Improving cells, cavalry lines - - -	Completed.
Constructing staircases in the veranda of cavalry barracks - - -	- ditto.
Constructing a small cistern in the bath-rooms of the dragoons' hospital - - -	- ditto.
Constructing out-offices for the serjeants' quarters in the cavalry lines - - -	- ditto.
Removing masonry partition at each end of the tiled, male, hospital in the cavalry lines - - -	- ditto.
Making new floors in the wash-house of Her Majesty's 4th Inniskilling Dragoons' Hospital - - -	- ditto.
Converting the spaces under the staircases of cavalry barracks into troop storerooms - - -	- ditto.
Fixing hooks and punkahs in cavalry barracks - - -	- ditto.
Fixing hooks and punkahs in the hospital - - -	- ditto.
Filling up two large pits west of the cavalry lines - - -	- ditto.
Constructing a hospital cart-shed - - -	- ditto.
Adding eight bath-rooms, for private ablution, to the lavatories, and adding verandas to the cavalry cook-houses - - -	- ditto.
Constructing water cisterns and channels for waste water of tatties - - -	- ditto.
Perforating window-shutters of the cavalry detention-room, and supplying screen to the same - - -	- ditto.
Altering a latrine in the cavalry lines - - -	- ditto.
Raising parade ground in front of the left wing barracks, so as to make the water run off - - -	- ditto.
Altering serjeants' and married men's quarters, cavalry lines - - -	In progress.
Constructing wooden covers to cesspools of cook-house and ablution-rooms of cavalry barracks - - -	Completed.
Windows of cavalry barracks and staircases hung by hinges - - -	- ditto.
Making ladders to the roofs of double-storied buildings - - -	In progress.
Constructing mangers for sick horses' stables - - -	- ditto.

Infantry.

Improving cells - - -	Completed.
Constructing staircases in the verandas - - -	- ditto.
Constructing out-offices for the serjeants' quarters - - -	- ditto.
Enlarging ventilating holes in the walls of the hospital, and fixing temporary doors in the same - - -	- ditto.
Converting the spaces under the staircases into store-rooms - - -	- ditto.
Fixing hooks and punkahs in barracks - - -	- ditto.
Fixing hooks and punkahs in hospital - - -	- ditto.
Making circular air holes in the back walls of the cook-houses - - -	- ditto.
Constructing hospital cart shed - - -	- ditto.
Alterations and improvements to the ground about the new hospital - - -	- ditto.
Constructing culverts over the eastern road - - -	- ditto.
Fitting up five sunshades in the female hospital - - -	- ditto.
Making steps to the two rear blocks of patcherries - - -	- ditto.
Fitting the windows of upper story of new hospital with glazed windows - - -	- ditto.
Constructing a road to the new hospital - - -	- ditto.
Constructing a double-storied hospital, with its necessary detached buildings - - -	- ditto.
Adding 12 private ablution-rooms to lavatories - - -	- ditto.
Altering serjeants' and married men's quarters - - -	In progress.
Fitting a pendulum, and hanging the punkahs of infantry hospital with iron rods - - -	- ditto.
Dividing hospital steward's bathroom from veranda by a partition wall - - -	Completed.
Renewing the drains, and providing waste-water cistern of wash-houses with lids - - -	- ditto.

Mhow—Infantry—continued.

Making ladders to the roof of the double-storied buildings - - -	In progress.
Paving the circuit of the well in the soldiers' garden, and making a masonry drain to carry off the spilt water - - -	- ditto.
Erecting six urinaries for the three upper-storied barracks - - -	Completed.

Native Infantry.

Erecting a latrine for the hospital - - -	- ditto.
Erecting quarter-guard and cells for two Native Infantry regiments - - -	In progress.
Constructing a schoolroom for one regiment - - -	Completed.
Altering the latrines newly erected at the hospital - - -	- ditto.
Levelling the ground around one of the hospitals, and covering it with sand - - -	- ditto.
Putting a window into staff serjeants' quarters, No. 99, and a door into west side of the same - - -	In progress.
Converting an old barrack into quarters for the warrant and non-commissioned staff - - -	Completed.
Converting windows into half-glazed doors, in bazaar serjeants' quarters - - -	- ditto.
Fixing hooks and punkahs in garrison cells and guardroom - - -	- ditto.
Altering part of the staff hospital into medical storerooms - - -	In progress.
Building a 15-feet culvert over the end drain, near the commissariat spirit-godown - - -	- ditto.
Putting doors and windows to commissariat weighing-shed - - -	- ditto.
Converting three arches in the corner of south-west portion of the fort into latrines - - -	- ditto.
Piercing a window in provost serjeant's quarters in fort - - -	Completed.

Cantonment.

Improving the drainage on the north-east - - -	- ditto.
Constructing a bund across the Gumbeer river - - -	- ditto.

INDORE.

European Troops.

Fixing hooks and punkahs in barracks - - -	Completed.
Fixing hooks and punkahs in hospital - - -	- ditto.
Constructing two gratings for the bath-rooms - - -	- ditto.
Constructing sunshades to the ventilating windows of the hospital - - -	- ditto.
Erecting steps on the north end of barracks - - -	- ditto.
Putting shelves in the hospital store rooms - - -	- ditto.
Drainage and cesspool to the cook-house of the barracks - - -	- ditto.
Fixing pullies and boring holes for punkahs in the barracks - - -	- ditto.

Native Troops.

Reconstructing the Cavalry escort barracks - - -	- ditto.
Reconstructing Sowars' lines - - -	- ditto.
Reconstructing the ten Native Infantry barracks - - -	- ditto.

NEEMUCH.

Artillery.

Adding two additional bays to the quarter-guard and gun-shed - - -	Completed.
Erecting tiled veranda in front of the Artillery quarter-guard - - -	- ditto.

Infantry.

Constructing barracks and subsidiary buildings for a wing - - -	In progress.
Constructing a guard-room in the fortified square - - -	- ditto.

NEEMUCH—*Infantry*—continued.

Constructing six wash-houses and six urinaries
 Constructing bath-rooms to be attached to certain buildings - - - -
 Making additions and alterations to staff serjeants' quarters - - - -
 Making additions and alterations to the barracks and patcheries - - - -
 Making additions and alterations to the solitary cells, wash-houses, &c. - - - -
 Constructing a dry-earth shed for the use of the troops - - - -

NUSEERABAD.

Artillery.

Making additions and alterations to the artillery serjeants' mess - - - -
 Converting artillery hospital's guard-room into apothecary's quarters - - - -
 Making additions and alterations to the artillery barracks - - - -

Infantry.

Constructing barracks with subsidiary buildings - - - -
 Constructing a guard-room - - - -
 Constructing a temporary guard-room - - - -
 Constructing a new pattern urinary - - - -
 Constructing 15 urinaries, and converting bomb-proof No. 32 into a latrine - - - -
 Constructing four skittle-sheds - - - -
 Constructing bath-rooms to be attached to certain buildings - - - -
 Making additions and alterations to the staff serjeants' quarters - - - -
 Making additions and alterations to the barracks and patcheries - - - -
 Making additions and alterations to the hospital - - - -
 Supplying fittings to the armourer's shop - - - -
 Marking out manure yards, and constructing dry-earth sheds - - - -
 Making additions and alterations to the seats of privy - - - -
 Supplying wooden gratings and pegs to the plunge-bath - - - -
 Constructing dressers for basins, and supplying wooden gratings for the wash-house - - - -
 Making additions and alterations to various buildings - - - -

Cantonment.

Supplying iron vessels to the several cook-rooms - - - -

AJMERE.

Infantry.

Constructing four skittle sheds - - - -
 Making additions and alterations to various buildings - - - -
 Making additions and alterations to the officers' quarters - - - -

TARAGHUR.

Infantry.

Constructing a skittle-shed - - - -
 Making additions and alterations to the public buildings - - - -
 Constructing a urinary, and altering the latrines - - - -
 Providing quarters for medical officer - - - -

In progress.

Completed.

In progress.

- ditto.

Completed.

- ditto.

Completed.

- ditto.

- ditto.

In progress.

- ditto.

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

In progress.

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

Completed.

- ditto.

- ditto.

Completed.

- ditto.

- ditto.

- ditto.

TANNA.

Native Troops.

Constructing temporary privy accommodation for a wing - - - -
 Making alterations to the privy of the hospital - - - -

Completed
 22 August
 1866.
 22 Sept.
 1866.

BULSAR.

Constructing four chupper sheds, with out-houses, for tents used as temporary sanitarium, at Teethul - - - -
 Constructing a skittle-alley at Teethul - - - -
 Making fireplaces in the cook-room attached to the new chupper shed, constructed for families at Teethul - - - -

Completed.
 - ditto.

- ditto.

SURAT.

Native Infantry.

Constructing solitary cells - - - -
 Constructing two masonry sentry-boxes, and adding a veranda to the regimental quarter-guard - - - -
 Removing the old, and building new quarters for two sweepers and a leechman, and building a new privy for the Infantry Hospital - - - -
 Altering a portion of the Dumas Road, close by the new infantry lines - - - -
 Converting a portion of the old bullock-shed into quarters for two fire-engine lascars, a bazaar peon, and a bazaar chowdry - - - -
 Erecting three rooms as quarters for certain servants, attached to the Native Infantry Hospital - - - -
 Raising partition walls in the new hospital cook-room - - - -

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

BROACH.

Native Infantry.

Constructing two movable sentry-boxes - - - -

Completed.

BARODA.

Artillery.

Providing new dungree-cloth ceiling to barracks and hospitals - - - -
 Adding a veranda to the rear of the female hospital - - - -
 Providing fireplaces with chimney, to the cook-houses of the male and female hospitals - - - -
 Providing new dungree-cloth ceiling to the permanent patcherry for four families - - - -
 Providing new dungree-cloth ceiling to the guard-room - - - -
 Raising the partition wall between each quarter of the permanent patcherry - - - -
 Adding a third revolving, covered ventilator to the quarter-guard - - - -
 Making covered passage from female hospital to privy - - - -
 Altering the privies of the male and female hospital - - - -
 Altering the artillery latrine - - - -
 Putting up two additional doors in the buildings, occupied by the detachment - - - -

Completed.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

- ditto.

Native Infantry.

Providing new dungree-cloth ceiling to the hospital - - - -
 Building walls between the pillars of the pendall, occupied by the 2nd class hospital servants - - - -

- ditto.

- ditto.

AHMEDABAD.

Artillery.

Erecting two temporary barracks - - -	Completed.
Erecting three permanent stables - - -	- ditto.
Altering the hospital latrine - - -	- ditto.
Constructing cook-houses and latrines - - -	- ditto.
Constructing wash-houses - - -	In progress.
Adding a veranda to the hospital - - -	Completed.
Erecting a shed for the sick-carts in the hospital compound - - -	- ditto.
Making an addition to the serjeants' quarters of the two new temporary barracks - - -	- ditto.
Altering the latrines of the cells - - -	- ditto.
Ditto ditto of the old family quarters - - -	- ditto.
Ditto ditto quarter-guard - - -	- ditto.
Ditto ditto school-house - - -	- ditto.
Making alterations to the bath-rooms and latrines of the hospital - - -	- ditto.
Paving with stone the hospital - - -	- ditto.
Providing ridge and ceiling ventilation to the old family quarters - - -	- ditto.
Providing iron hanging shelves in the steward's store-room at the hospital - - -	(Not stated.)
Adding a ward for females to the hospital - - -	In progress.
Making ridge ventilation, and providing glazed doors and windows to the cell guard-room - - -	Completed.
Pulling down the old temporary theatre - - -	In progress.
Ditto ditto harness-rooms - - -	- ditto.
Ditto coffee-shops, formerly staff serjeants' quarters - - -	- ditto.
Ditto staff serjeants' quarters tiled roof - - -	- ditto.
Ditto outhouses to ditto - - -	- ditto.
Ditto five old temporary cook-houses - - -	- ditto.
Ditto five old latrines - - -	- ditto.
Ditto one old washhouse - - -	- ditto.
Adding enclosed verandas to three sides of the canteen - - -	- ditto.
Providing ridge ventilation and smoke-shafts to the cook-houses of the old family quarters - - -	- ditto.
Flooring with bricks the rear veranda of the old family quarters - - -	Completed.
Erecting a double fives-court, one side capable of being used as a racket court - - -	In progress.
Converting half the old temporary gun-shed into a harness-room, as a temporary arrangement - - -	Completed.
Enclosing the east veranda of the hospital serjeant's quarters - - -	- ditto.
Paving with stone the two new temporary barracks - - -	In progress.
Erecting a shoeing-shed, with double forge - - -	- ditto.
Constructing a bowling-alley - - -	- ditto.
Paving with stone the three "Persian" barracks - - -	- ditto.
Erecting two blocks of family quarters - - -	Completed.
Providing ceiling-mats to the veranda roofs of the hospital - - -	- ditto.
Double tiling the veranda roofs of the hospital serjeant's quarters - - -	- ditto.
Altering the hospital latrines - - -	- ditto.
Erecting a temporary grain-house - - -	- ditto.
Erecting two temporary urinal sheds - - -	In progress.
Erecting a temporary urinal shed in the hospital compound - - -	- ditto.
Erecting a shed for dry earth - - -	Completed.
Deepening the nulla which forms the outlet from the tank near the General's compound - - -	- ditto.

Native Infantry.

Altering the right flank hospital - - -	Completed.
Altering the left flank hospital - - -	- ditto.
Altering the staff and detail hospital - - -	- ditto.
Erecting latrines - - -	In progress.
Erecting a cook-room for the right flank hospital - - -	- ditto.
Making additions and alterations to the porch used as a guard-room for right flank - - -	Completed.

DEESA.

Artillery.

Constructing harness-rooms and a workshop - - -	Completed.
Constructing straw-house for the hospital - - -	- ditto.
Constructing a dead-house for the hospital - - -	- ditto.
Constructing a cook-house for the use of the apothecary - - -	- ditto.
Constructing a privy for ditto - - -	- ditto.
Flooring with rough cut stone the barracks - - -	- ditto.
Making alterations and improvements in the patcheries - - -	- ditto.
Converting the window in the outer wall of the hospital into a door - - -	- ditto.
Raising roof of hospital - - -	- ditto.
Placing ceiling-cloth in the hospital - - -	- ditto.
Placing a ventilator on the roof of the quarter-guard - - -	- ditto.
Making additions and alterations to the latrines for married men - - -	- ditto.
Removing the present mud floor, and making a new permanent floor of stone pavement in the patcheries - - -	- ditto.
Placing a ridge-ventilator on each of the three barracks - - -	- ditto.
Placing glass windows in lieu of wooden bars to the windows in the barracks - - -	- ditto.
Adding a new veranda to the library and school-house - - -	- ditto.
Making alterations and additions to serjeants' quarters - - -	In progress.
Providing continuous ridge ventilator for the horse-stables - - -	Completed.
Making additions and alterations to the latrines in the hospital - - -	- ditto.

Infantry.

Constructing temporary barracks - - -	In progress.
Providing additional hospital accommodation to suffice for a full European regiment - - -	Completed.
Constructing permanent family quarters - - -	In progress.
Providing quarters for the provost serjeant - - -	Completed.
Constructing a veranda in front of the female ward - - -	- ditto.
Constructing a permanent urinary - - -	- ditto.
Demolishing urinaries in the lines - - -	- ditto.
Adding a thatched veranda to the hospital - - -	- ditto.
Making additions and alterations to 16 latrines for married men - - -	- ditto.
Making additions and alterations to the latrines for single men - - -	- ditto.
Making additions and alterations to the latrines in rear of the school-house - - -	- ditto.
Converting a gymnasium into married men's quarters - - -	- ditto.
Making additions and alterations to the quarter-guard - - -	- ditto.
Reconstructing the fireplaces in the centre of the cook-house - - -	- ditto.
Fixing iron ventilators, ceiling-cloth, &c. - - -	- ditto.
Making alterations and improvements in the patcheries - - -	- ditto.
Making additions and alterations to the latrines for males in the hospital - - -	- ditto.
Constructing barrack-master's quarters, to contain office - - -	In progress.
Making additions and alterations to barrack-store - - -	Completed.

Native Infantry and Cavalry.

Making additions and alterations to the latrines of the Native Cavalry and Infantry Hospitals - - -	- ditto.
Constructing solitary cells for the Native Cavalry - - -	- ditto.
Erecting sentry-boxes in the lines of Native Infantry regiment - - -	- ditto.

MOUNT ABOO.

Constructing barracks - - - -	In progress.
Constructing barrack store - - - -	Completed.
Purchasing a bungalow for the medical officer	- ditto.
Constructing footpaths in the standing camp -	- ditto.
Sinking two wells for the standing camp -	- ditto.
Erecting chuppur huts for the accommodation of the European troops in the standing camp	- ditto.
Erecting chuppered huts for hospital servants	- ditto.
Making mat frame partition walls for married men's quarters - - - -	- ditto.
Erecting temporary screens in three barracks	- ditto.
Draining the lines of the Sanitarium barracks, and destroying rank vegetation - - - -	- ditto.
Repairing with cut stone the lavatory floors of the Sanitarium - - - -	In progress.
Supplying wooden gratings for the ablution-rooms of the Sanitarium - - - -	Completed.

BHOOJ.

Native Infantry.

Additions and alterations to the hospital latrine	Completed.
Constructing two latrines for men, and one for women - - - -	In progress.

UPPER SIND.

Native Infantry.

New lines at the outposts - - - -	In progress.
Additional work for the lines at Soee - - - -	- ditto.
Additions to the pendalls at the outpost -	- ditto.

KURACHEE.

Artillery.

Quarters for four staff serjeants - - - -	Completed.
Quarters for an assistant apothecary, with two apprentices - - - -	- ditto.
Skittle and bowling alley - - - -	- ditto.
Removing and clearing bazaar lines, and paying compensation to householders -	- ditto.
Providing pukka teak trellis work for the veranda of hospital steward's quarters -	- ditto.
Harness-rooms, with workshops - - - -	In progress.
Partitioning off a portion of No. 1 barrack, Somerset lines - - - -	Completed.
Additions and alterations, &c. to the barracks.	In progress.
Constructing sheds for sick carts for the troops	Completed.

Infantry.

Erecting an iron frame, temporary, building in the Napier lines - - - -	- ditto.
Putting trellis work to the veranda in front of the Infant and Industrial Schools and the quarters of the schoolmaster - - - -	- ditto.
Dividing the doors in one of the barrack-rooms in the Napier lines into two equal parts, capable of being closed or opened independently - - - -	- ditto.
Dividing the doors in nine barrack rooms in the Napier lines into two equal parts, capable of being closed and opened independently - - - -	In progress.
Putting eave ventilators in the centre ward, ground floor, of the hospital in the Napier lines - - - -	Completed.
Putting trellis work to the veranda of the building occupied by serjeants' mess - -	- ditto.
Skittle shed, with two bowling alleys - -	In progress.
Providing shelves in the married soldiers' barracks, Napier lines - - - -	- ditto.
Additions and alterations to the barracks.	- ditto.

KURACHEE—continued.

Depôt.

Making certain additions and alterations to the outbuildings connected with barracks, hospitals, patcheries, &c., in the Fitzclarence lines - - - -	Completed.
Renewing the roofs of the barracks, &c. -	In progress.
Erecting punkah partitions in the hospital -	Completed.
Adding ventilators to the canteen and school-room - - - -	- ditto.
Alterations to the non-commissioned officers' rooms - - - -	In progress.
Fitting up a building as a library and reading-room - - - -	Completed.
Erecting pukka partitions in the schoolroom -	- ditto.
Additions and alteration, &c., to the barracks	In progress.

Native Infantry.

Constructing a privy for natives - - - -	Completed.
--	------------

HYDERABAD.

Artillery.

Constructing sheds for the troops - - - -	Completed.
Alterations to the barracks and buildings	In progress.
Harness-rooms, with workshops - - - -	- ditto.
Skittle-sheds, with bowling-alley - - - -	- ditto.
Constructing latrines in the fort - - - -	Completed.

European Infantry.

Skittle-sheds, with two bowling-alleys - -	In progress.
Alterations to the barracks and buildings	- ditto.
Erecting a guard-room in the fort - - - -	Completed.

Native Infantry.

Erecting new latrines in No. 1 Native Infantry lines - - - -	- ditto.
--	----------

GHIZREE.

Constructing a dead-house - - - -	Completed.
Alterations and additions to the pendalls -	- ditto.
Providing floor ventilation in the barracks -	- ditto.

COLABA.

Infantry.

Making certain additions and alterations to the solitary cells - - - -	Completed.
Providing glazed in lieu of venetian shutters to No. 104 bungalow - - - -	- ditto.
Erecting two skittle-alleys for the barracks -	- ditto.
Erecting a sick cart shed in the hospital compound - - - -	- ditto.
Erecting huts for cooks and other public followers of Her Majesty's 4th King's Own Royal Regiment - - - -	- ditto.
Making certain improvements to the armourer's shop - - - -	- ditto.
Providing 14 iron water tanks for the European infantry barracks - - - -	In progress.
Substituting glazed for venetian shutters on the monsoon side of all the officers' bungalows - - - -	- ditto.
Providing wrought-iron pipes to the bath-room near No. 79 barrack - - - -	- ditto.
Making certain improvements to No. 104 bungalow - - - -	Completed.
Erecting a porch in front of bungalow No. 102	- ditto.
Constructing raised platforms in the rooms now used as urinaries attached to barracks -	In progress.
Enclosing the ground in rear of the solitary cells, Colaba, and erecting a shed thereon -	- ditto.
Constructing 12 temporary urinal sheds for barracks - - - -	Completed.

COLABA—Infantry—continued.		BOMBAY.	
Providing cloth-ceiling to the roof, and wire netting to the ventilators, of the infantry hospital - - - - -	Completed.	Adding a bath-room and privy to the Brigadier General's bungalow on the esplanade - - - - -	Completed.
Making certain improvements to the quarter-guard of the infantry barracks - - - - -	- ditto.	Erecting a stand for the rain-gauge in front of the hospital - - - - -	- ditto.
Providing ceiling and ridge ventilation to the school-room - - - - -	- ditto.	Paving with finely-dressed stone the floor of the privy - - - - -	- ditto.
Constructing two temporary barrack serjeants' mess and reading-rooms - - - - -	- ditto.	Making certain additions and alterations to the mess quarters - - - - -	- ditto.
Laying down Vehar water pipe to the infantry barracks and officers' bungalows - - - - -	- ditto.	Making additions and alterations to the lines on the esplanade - - - - -	In progress.
Providing four raised sinks in the cook-rooms of the regimental barracks - - - - -	- ditto.	ADEN.	
Providing wooden steps to the bath-room in No. 6 bungalow - - - - -	- ditto.	<i>European Infantry and Artillery.</i>	
Providing wooden gratings to all the bath-rooms attached to the infantry barracks - - - - -	- ditto.	Removing and rebuilding cooking-shed for the use of the Royal Artillery - - - - -	Completed.
Erecting two bath-rooms for the quarter-guard and cells - - - - -	- ditto.	Substituting terraced roofs to Nos. 1 and 2 wash-houses of barracks, Front Bay - - - - -	- ditto.
Constructing one urinal shed for the serjeants' mess - - - - -	(Not stated.)	Subsidiary buildings at Isthmus - - - - -	- ditto.
		Fixing cross-bars, pulleys, and uprights in veranda, No. 2 barracks, Front Bay - - - - -	- ditto.
		Removing and rebuilding privy, M. N. G. Hospital - - - - -	- ditto.
		Four upper-storied barracks in Front Bay - - - - -	- ditto.
		Three upper-storied barracks at Steamer Point - - - - -	- ditto.
		Additional upper-storied barracks at Steamer Point - - - - -	In progress.
		Family quarters and out-houses at Isthmus - - - - -	- ditto.
		Two urinaries, 800 feet covered passage, and ordinary bath-rooms, Front Bay - - - - -	Urinaries completed; work in progress.
		Armourer's shop, Front Bay - - - - -	In progress.
		Substituting terraced roofs to buildings - - - - -	- ditto.
		Additional accommodation for hospital at the Isthmus camp and Artillery hospitals - - - - -	The Isthmus one in progress; the others completed.
		Additional skittle-alleys to barracks in Front Bay and Steamer Point - - - - -	In progress.
		Paving lower and upper wards for European Hospital - - - - -	Completed.
		Increasing size of solitary cells, Front Bay - - - - -	(Not stated.)
		Upper-storied quarter-guard in Front Bay - - - - -	In progress.
		Lines for Golundauze at Steamer Point - - - - -	- ditto.
		Altering seats of privies in camp and Steamer Point, to carry out the new dry conservancy system - - - - -	- ditto.
		Raised sinks to cook-houses - - - - -	- ditto.
		Veranda to Golundauze lines at Steamer Point - - - - -	- ditto.
		Roof to cook-house at Perim - - - - -	Completed.
		Drainage, bath-room floor, Isthmus - - - - -	- ditto.
		Deepening and increasing size of slopes of drains behind patcheries, Steamer Point - - - - -	In progress.
		<i>Native Infantry Lines.</i>	
		Temporary latrines in hospital compound - - - - -	Completed.
		Altering seats of privies - - - - -	- ditto.
		Privy for detachment at Isthmus - - - - -	- ditto.
		Adding six open verandas to pendalls, solitary cells, for Native infantry - - - - -	In progress.
		Roofing privy for detachment, Isthmus - - - - -	- ditto.
		Altering seats, Native Infantry Hospital, in accordance with dry conservancy system - - - - -	- ditto.
COLABA SANITARIUM.			
Widening the gate of No. 117 bungalow - - - - -	Completed.		
Providing sun-shades to the Sanitarium Hospital - - - - -	- ditto.		
Providing railing to the south and west sides of Depôt barracks - - - - -	- ditto.		
Filling up a hollow, south of the serjeant major's quarters at the Sanitarium - - - - -	- ditto.		
Providing extra Vehar water pipe to the female ward, Sanitarium Hospital - - - - -	- ditto.		
Making certain improvements to the privies of the Sanitarium Hospital - - - - -	- ditto.		
Providing trellis-work to the veranda of the hospital serjeant's quarters, Sanitarium Hospital - - - - -	- ditto.		
Making certain additions and alterations to No. 111 bungalow, occupied by Dr. Corbett - - - - -	- ditto.		
Making certain additions and alterations to the bungalow occupied by Captain Smith - - - - -	- ditto.		
Laying on Vehar water to the soldiers' garden attached to the Sanitarium barrack - - - - -	- ditto.		
Constructing two urinal sheds for the Sanitarium barrack - - - - -	In progress.		
Making certain improvements to the single men's barrack - - - - -	Completed.		
Providing cloth-ceiling and paved floor for the smaller barracks - - - - -	- ditto.		
Providing roof ventilators, cloth-ceiling, &c., to the guardroom - - - - -	- ditto.		
Providing smoke shafts to the cookroom - - - - -	- ditto.		
Providing roof ventilaton, cloth-ceiling, &c., to the Sanitarium Hospital - - - - -	- ditto.		
Converting the guard-room into hospital serjeants' quarters - - - - -	- ditto.		
Converting three rooms of the 2nd class servants' quarters into a guard-room - - - - -	- ditto.		
Laying down Vehar water pipe to the Sanitarium - - - - -	- ditto.		

EXTRACT from CIRCULAR, No. 19, of 5th March 1866.

PUBLIC WORKS.

PRINCIPLES of Construction of HOSPITALS for EUROPEAN and NATIVE TROOPS, by
Lieutenant-Colonel *Crommelin*, R. E.

HOSPITALS FOR EUROPEAN TROOPS.

Regimental and
general hospitals.*Proposal No. 1.*—That, as a rule, separate hospitals must continue to be provided for every regiment or detachment; and that general hospitals should in special cases only be constructed for the troops serving in India.*Conclusion of the Government of India.*—The Government of India considers that, as a rule, separate hospitals must continue to be provided for every regiment or detachment, and that a general hospital is not, unless under exceptional circumstances, required in time of peace.Extent of accom-
modation.*Proposal No. 2.*—That hospital accommodation be provided to the following extent for the units of each arm of the service :—

	Men.	Women.
Regiment of Infantry - - - - -	110	20
Regiment of Cavalry - - - - -	62	14
Light Field Battery of Artillery - - - - -	20	4
Garrison Company of Artillery - - - - -	10	4

The above number are in the proportion of 12 per cent. of strength when the latter exceed 400 men, and of 12 to 15 per cent. for smaller detachments.

Conclusion of the Government of India.—After a careful examination of the hospital returns for the last few years, the Government of India is of opinion that it will suffice to provide hospital accommodation, at the generality of stations, according to the following scale :—

At 10 per cent. on full regulation strength for regiments, and for detachments exceeding 400 in number.

At 12 per cent. for detachments under 400 men.

Morar.
Saugur.
Delhi.
Agra.
Peshawu.

At the stations in the Bengal Presidency noted in the margin, which have proved to be more unhealthy than others, the above rates may be thus increased; viz., 12 per cent. on full regulation strength for regiments and for detachments exceeding 400 in number; 12 to 15 per cent. on strength for smaller detachments than 400 men.

The increased proportions will also apply to unhealthy stations in the Bombay and Madras Presidencies.

The complement for each arm of the service will be as follows :—

	At unhealthy Stations.	At healthy Stations.
	Men.	Women.
Infantry - - - - -	110	92
Cavalry - - - - -	62	50
Battery of Artillery - - - - -	20	18
Garrison Company of Artillery - - - - -	10	10

The extent of accommodation for women is still under consideration with reference to a late order which directs that women shall, in all practicable cases, receive medical treatment in their own quarters; on this point further instructions will be issued.

Number of floors in
the plains.*Proposal No. 3.*—That all regimental or detachment hospitals, which may hereafter be constructed in the plains of India, shall be doubled-storied buildings, in which the whole
of

of the wards for the sick, together with a certain necessary amount of subsidiary accommodation, shall be arranged in the upper floors, and the day-room administrative offices, quarters for medical subordinates, &c., shall be provided in the lower stories; further, that the kitchen, guard-room, dead-house, sheds for ambulance-carts, privy, and lavatory for general use, shall be in out-buildings.

Conclusion of the Government of India.—Looking to the great expense that is involved in the future provision of hospital accommodation throughout India, to the excess of space for auxiliary purposes in the lower floors that will be the consequence of the construction of buildings unnecessarily large, to the fact that the proportion of sick only exceeds seven and eight per cent. of strength for a brief period during each year, and lastly, to the positive advantage there may be in having accommodation in the lower floor for a small number of certain classes of patients, the Government of India considers that it is not necessary to provide accommodation in the upper floor for more than three-fourths of the total complement of patients, the remaining one-fourth being arranged for in well-raised and well-ventilated lower floors. By such an arrangement the actual necessity of placing patients in the lower floor will rarely occur.

Proposal No. 4.—That at hill stations the same description of hospital be provided, but that, when there is restricted space, accommodation for a portion of the patients may be in the lower floor. Number of floors at hill stations.

Conclusion of the Government of India.—The Government of India does not anticipate any difficulty in the proper ventilation of lower floors, and, for the reason given in the preceding conclusion, approves generally of this proposal. A larger portion than one-fourth of the total complement of patients may, however, be provided for in the lower floors, if such an arrangement should prove convenient with reference to existing auxiliary accommodation.

Proposal No. 5.—That buildings of more than two stories are only admissible in localities where a certain amount of accommodation is absolutely required, and where, owing to restriction of space, it cannot be provided without recourse being had to a third, or perhaps a fourth, story. Limit of number of floor.

Conclusion of the Government of India.—The Government of India agrees to the proposal.

Proposal No. 6.—That the subdivision of a hospital into a number of small buildings is objectionable, because it tends to unnecessary expense, to the occupation of too great space, and to the overtaxing of the powers of the establishments; and further, that it is not necessary, in military hospitals, which are rarely fully occupied, in which the generality of cases treated are not of a serious character, and in which the whole of the sick have liberal accommodation provided for them in upper floors.

Conclusion of the Government of India.—The Government of India approves of the proposal, and the subdivision of a hospital into a number of very small buildings is objectionable on sanitary, administrative, and financial grounds.

The general arrangement of the approved hospital specimen plans, which will be presently adverted to, will, it is believed, meet generally the views of the Home Commission.

Proposal No. 7.—There can be little or no risk in placing 50 or 60 sick in one building, especially if the building be so designed that it shall not be covered by one continuous roof, but shall be separated into sections, each of which shall have, as nearly as possible, an independent ventilation. Number of sick under one roof.

Conclusion of the Government of India.—This proposal is approved of by the Government of India.

Proposal No. 8.—That the number of buildings for each arm of the service should be as follows:—For a regiment of infantry, two buildings for the men, and one building for the women and children. Number of buildings for each of the units.

For a regiment of cavalry,* one building for the men, and another for the women and children.

For one or two batteries of artillery, a single building for both men and women; for three or four batteries, two buildings and so on, the rule being that one building shall only serve for two batteries. In the event, however, of its being necessary to keep the sick of each

* If a greater classification of sick is required than can be arranged for in five wards, a second building should be given.

each battery entirely separated from each other, then each battery should have its own separate building.

Conclusion of the Government of India.—The Government of India approves also of this proposal, but considers that a separate hospital should be provided for the women, whenever the number of female patients amounts to ten or upwards.

Component parts of a hospital.

Proposal No. 9.—That the component parts of every military hospital shall consist of—

- | | |
|--|---|
| 1. Wards for the sick and convalescents. | 8. Surgery. |
| 2. Ward offices; viz., superintendent's rooms, sculleries, privies and urinaries, bath and ablution rooms. | 9. Receiving room. |
| 3. Day-rooms for sick and convalescents. | 10. Outdoor kitchen. |
| 4. Quarters for medical subordinates. | 11. Outdoor lavatory (with shower bath). |
| 5. Quarters for hospital serjeants. | 12. Outdoor privy. |
| 6. Quarters for hospital orderlies. | 13. Guard-room. |
| 7. Store-rooms. | 14. Shed for ambulance carts, hearse, &c. |
| | 15. Dead-house. |
| | 16. Enclosure wall or railing. |

Conclusion of the Government of India.—The Government of India considers that a separate dispensary is unnecessary, and that one room will suffice for a combined surgery and dispensary. The following, however, should be added to the above list :—

1. Houses for native establishment.
2. Laundry.
3. A small detached building for contagious diseases.

Subdivision of wards.

Proposal No. 10.—That the objections to a multiplicity of buildings apply also to a multiplicity of wards; or, in other words, to the subdivision of the sick amongst a number of small wards; and further, that the classification of diseases and proper subdivision of the sick will be sufficiently met by the following numbers of wards in each description of hospital :—

Infantry hospital,—five large and two small wards for the men, and one large and one or two small wards for the women.

Cavalry hospital,—three large and two small wards for the men, and one large and one small ward for the women.

Artillery (each battery),—two large and one small ward for the men, and one ward for the women.

Conclusion of the Government of India.—The Government of India approves of the general principle involved in the proposal, and considers that the proposed numbers of wards for each description of hospital are satisfactory, with reference to hospitals intended to accommodate the whole of the patients in upper-storied rooms. The number of wards must, however, necessarily be somewhat increased when the lower floors are in part to be occupied by patients. The specimen plans, which accompany this circular, will illustrate the increase.

Wards for infectious diseases, ophthalmia, delirium tremens, insanity.

Proposal No. 11.—That a detached building for infectious diseases does not seem necessary for any hospital, and certainly not for any hospitals smaller than those for a regiment of infantry or cavalry; but if its provision be decided upon, that a single-storied building, well raised, should answer the purpose, and that one such building should suffice for a whole station, instead of separate ones being attached to each hospital.

Conclusion of the Government of India.—After carefully weighing all that has been advanced on this very important point, the Government of India has come to the conclusion that it is not necessary to add to regimental hospitals detached buildings for contagious or other special diseases upon the extensive scale advocated by many. Such a measure would involve the provision of an excessive amount of hospital accommodation generally.

One or two small detached wards, however, in which a few isolated cases may occasionally be accommodated, will no doubt often prove very useful. The Government of India therefore authorises, for each hospital of regiments of cavalry or infantry, the provision of a well-raised single-storied building, to contain two wards, each ward being sufficiently large for two patients.

The wards are to be understood as intended especially for contagious diseases, but, when there is immunity from such diseases, they may be occupied by insanes, prisoners, or men suffering under delirium tremens.

Ophthalmic patients may be accommodated in the hospital proper, in a ward to which a separate lavatory is attached.

For smaller hospitals a detached building for special diseases will not be allowed.

Proposal

Proposal No. 12.—That the following is a suitable distribution of beds in the wards of the several hospitals :—

Distribution of
beds in the wards.

Infantry Male Hospital.			Beds.	Cavalry Female Hospital.			Beds.
4	Wards of 24 beds each	- -	96	1	Ward of - - - -	-	12
1	ditto 12 ditto	- -	12				
2	ditto 2 ditto	- -	4	1	ditto - - - -	-	2
Total - -			112	Total - -			14
Infantry Female Hospital.				Artillery Hospital for a Light Field Battery.			
1	Ward of 18 beds	- - -	18	1	Ward for Male	- - -	12
2	ditto 2 ditto each	- -	4	1	ditto ditto	- - -	6
Total - -			22	1	ditto ditto	- - -	2
Cavalry Male Hospital.				1	ditto for Females	- - -	4
2	Wards of 24 beds each	- -	48	Total - -			24
1	ditto 10 ditto	- - -	10				
2	ditto 2 ditto	- - -	4				
Total - -			62				

Conclusion of the Government of India.—The conclusion on proposal No. 10 will also apply generally to this proposal. The Government of India approves of the proposed distribution of beds for hospitals intended to accommodate the whole of the patients in the upper floor. The specimen plan will illustrate the necessary revised distribution, when the lower floors are to be in part occupied by the sick.

Proposal No. 13.—That the beds be arranged on the opposite sides of the room, between the doors, and placed either parallel to the walls at the distance of four feet from them, or with their heads to the walls; that not more than two beds be placed in the wall-space between two doors on the same side of the ward, or between the opposite doors of the ward; that there be not less than half as many doors in the length of the ward as there are beds; and that the doors be in equal numbers on the opposite sides of the wards.

Arrangement of
beds.

Conclusion of the Government of India.—The Government of India approves of the proposal generally.

For hospitals in the plains of India, the side-openings should, as a rule, be doors. At hill stations, and in certain localities in the plains, both doors and windows may be resorted to, the proportion of each being regulated by local conditions of climate, &c.

In parts of the country in which the climate is exceptionally hot throughout the year, it may perhaps be sometimes desirable so to arrange the wards that there shall only be one bed between two doors, or between a window and a door.

Regarding the proposed parallel arrangement of beds, it is not at present necessary that the Government of India should give any orders.

Proposal No. 14.—That all large wards be 26 feet in width and 21 feet in height to wall-plate, and that the wall-space per bed in them be 10 feet, thus giving an area of 130 superficial feet per bed; that the wall-space per bed in wards for convalescents be 7½ feet only, which length will give an area of 97½ superficial feet per bed; and that in small wards the area per bed may average from 150 to 180 superficial feet per bed.

Dimensions of
wards, floor space
for beds, &c.

Conclusion of the Government of India.—The Government of India considers that the space in the main wards should be as follows:—

In the plains—

- 10 running feet per bed.
- 24 " " width of ward.
- 20 " " height of wards from floor to wall-plate.

These dimensions give 120 superficial feet and 2,400 cubic feet per bed.

When the lower floor is not intended to be occupied by patients, the height from floor to wall-plate to be 16 feet.

In hill stations—

- 8½ running feet per bed.
- 24 " " width of ward.

Height of wards 16 to 18 feet, according to the altitude of the station.

These dimensions give 102 superficial feet, and 1,632 or 1,836 cubic feet per bed.

The space in the small wards should average, as proposed, from 150 to 180 superficial feet per bed; but $7\frac{1}{2}$ running feet, and 90 superficial feet per bed, will suffice for the large convalescent wards of regiments.

Attendant's room
and sculleries.

Proposal No. 15.—That an attendant's room and a scullery be attached to every large ward, and that it be an object to arrange the position of these offices so that they may also be within easy access of the small wards.

Conclusion of the Government of India.—The Government of India agrees to the proposal.

Lavatories and
privies for large
wards.

Proposal No. 16.—That a lavatory and privy be also attached, at the ends of the buildings, to each large ward, but cut off from it by a separately ventilated passage or lobby, or by both; and that the general plan of privy authorised for barracks, be adopted in preference to water-closets or water-latrines.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Proposal No. 17.—That one or two small privies and lavatories be provided for the use of the patients in the small wards, and of the attendants.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Day-rooms.

Proposal No. 18.—That day-rooms be allowed for the sick and the convalescents, and that in the large hospitals the dining-rooms and recreation-rooms for the sick be kept separate.

Conclusion of the Government of India.—The Government of India concurs generally in the proposal, but does not consider it necessary to provide separate apartments for messing and recreation, unless there be ample spare space in the lower floors, after providing for all other auxiliary purposes (as in the case of the regimental hospital in which all the sick are provided for in the upper story).

Occupation of
lower floor.

Proposal No. 19.—That the day-rooms, the quarters for medical subordinates, and for hospital serjeant and orderlies, also the store-rooms, surgery, and receiving-room, be arranged for in the lower story of the hospital.

Conclusion of the Government of India.—The Government of India agrees to the proposal. The provision of the detached accommodation, proposed by the Government North-Western Provinces and the Sanitary Commission for Madras, would lead to an increase of expense, which seems not to be called for.

Out-buildings.

Proposal No. 20.—That the hospital kitchen, a privy and a lavatory for general use, the guard-room, a shed for ambulance carts, &c., and dead-house, be provided in out-buildings.

Conclusion of the Government of India.—The Government of India approves of the proposal, also of the recommendation of the Sanitary Commission for Bengal, in regard to subdivision of privy and lavatory. A separate cook-room for the attendants does not, however, appear to be necessary. Shelter for the horses and buggies for the medical officers will be provided in the shed for ambulance carts, hearse, doolies, &c.

Enclosure.

Proposal No. 21.—That the hospital enclosure be either a brick wall two and a half or three feet high, or an iron railing four feet in height, and that an iron railing be always adopted when the hospital is within 100 feet of the enclosure.

Conclusion of the Government of India.—The proposal is agreed to by the Government of India.

Plans.

Proposal No. 22.—That the several proposed plans of hospitals be approved.

Conclusion of the Government of India.—The Government of India approves generally of all the plans, and also of the accompanying additional specimen plans, that have been prepared by Lieut.-Colonel Crommelin, to meet the conclusions of the Government of India, in regard to the partial occupation of the lower floors by patients, and to the diminution of the complement of sick to be provided for to 10 per cent. of strength.

The out-buildings, on plan No. 1, are in the intervals between the two hospitals, and not to windward of them. The covered passages are low and arcaded, and would not interfere with ventilation. The distance between the end ward offices and the wards appears sufficient. A greater separation would much lessen the convenience of these offices.

The

The plan proposed by the Sanitary Commission for Madras is considered objectionable, in regard to the following points:—

1. The detached block containing the quarters of the apothecary, hospital serjeants, &c., is considered unnecessary, and, from its projection, would tend to obstruct the ventilation of the two wings of the hospital.
2. An operating theatre, a record-room, and a medical officers' committee-room, are not deemed requisite for regimental hospitals.
3. The position of the privies and lavatories, immediately behind the centre of each block, is not thought satisfactory, as these offices would constantly be to the windward of the wards.
4. There are no sculleries or rooms for ward attendants, and no quarters for medical subordinates, except the single set for apothecary.
5. The small wards, for two beds each, have no thorough ventilation, and the large wards have no end ventilation.
6. There is not a sufficient arrangement provided for separating the convalescents from the sick.

The principle of construction, recommended by the Government of Bengal, is not approved by the Government of India, as it is considered that a building constructed according to the proposed plan could never be properly ventilated.

Four specimen plans of hospitals for male patients, and one enlarged plan of end ward offices, are circulated for information and guidance.

A plan of regimental hospital, for female patients, will be issued as soon as the scale of accommodation to be provided for this class of patients has been settled.

Plans of detached wards for special diseases, and of out-buildings, such as privy, lavatory, cook-room, dead-house, shed for ambulance carts, &c., will also follow.

HOSPITALS FOR NATIVE TROOPS.

Proposal No. 1.—That single-storied buildings, having their floors raised three feet in dry climates, and five feet in damp climates, should suffice for Native regimental hospitals, but that when space is restricted, or when it is required to accommodate more patients than can conveniently be placed on one floor, a second story may be resorted to. Single-storied buildings.

Conclusion of the Government of India.—The Government of India approves of the proposal. Where soils retain much moisture, the buildings should have a vaulted basement.

Proposal No. 2.—That a single building should suffice for every description of Native regimental hospitals. One building sufficient.

Conclusion of the Government of India.—The proposal is approved.

Proposal No. 3.—That the component parts of a Native regimental hospital should consist of— Component parts.

- | | |
|---|--------------------------------|
| 1. Wards for the sick. | 6. Out-door lavatory. |
| 2. Ward offices; viz., superintendent's rooms, sculleries, privies, and ablution-rooms. | 7. Out-door privy. |
| 3. Accommodation for Native doctors. | 8. Guard-room. |
| 4. Dispensary and receiving-room. | 9. Dead-house. |
| 5. Cook-room. | 10. Servants' houses. |
| | 11. Enclosure wall or railing. |

Conclusion of the Government of India.—The proposal is approved.

Detached wards for special diseases are not considered necessary for Native hospitals; a row of houses for Native establishment should be added to the list. See also conclusion under Proposal No. 12.

Proposal No. 4.—That the following number of wards should suffice:—

Number of wards.

For Infantry Hospitals—Two general wards, and two small wards for special cases.

For Cavalry Hospitals—Two general and one small wards for a full regiment, and one general and one small ward for a detachment.

Conclusion of the Government of India.—The Government of India approves of the proposal.

Punkahs are not considered necessary for Native hospitals, and Native officers can be attended either in the small wards, or at their own houses.

Proposal No. 5.—That it does not seem necessary to provide convalescent wards for Native regimental hospitals. Convalescent wards.

Conclusion of the Government of India.—The proposal is approved.

Arrangement of
beds.

Proposal No. 6.—That the beds should be arranged as recommended for European hospitals and barracks for unmarried European soldiers, viz., that they be arranged on the opposite sides of the wards, with their heads to the walls; that not more than two beds be placed in the wall-space between two doors on the same side of the ward, or between the opposite doors of the ward; that there be not less than half as many doors in the length of the ward as there are beds.

Conclusion of the Government of India.—The proposal is approved.

Dimension of
wards.

Proposal No. 7.—That all large wards should be 26 feet in width, and 16 feet in height from floor to wall-plate, and that the wall-space per bed should be $7\frac{1}{2}$ running feet, thus giving an area of $97\frac{1}{2}$ square feet per bed.

Conclusion of the Government of India.—The Government of India considers that the space should be as follows:—

Width of ward	-	-	-	-	-	22 feet.
Height of ward	-	-	-	-	-	16 „
Wall-space per bed	-	-	-	-	-	9 „
Area per bed	-	-	-	-	-	99 sup. feet.
Cubic feet per bed	-	-	-	-	-	1,584 cubic feet.

Attendant's rooms.

Proposal No. 8.—That an attendant's room, scullery, privy, and ablution-room should be attached to each large ward.

Conclusion of the Government of India.—The proposal is approved. See also conclusion under Proposal No. 12.

Dispensary.

Proposal No. 9.—That quarters for the Native doctor and the dispensary should be placed in the hospital proper, close to the wards.

Conclusion of the Government of India.—The proposal is generally approved of by the Government of India. See also conclusion under Proposal No. 12.

Out-buildings.

Proposal No. 10.—That a cook-room, a privy, a lavatory, a guard-room, and a dead-house should be provided in out-buildings.

Conclusion of the Government of India.—The Government of India approves of the following recommendations, that have been made by the several authorities regarding out-buildings:—

The cook-room to be divided into two compartments, one for Hindoos and one for Mussulmans; a well-ventilated building, 36×14 , divided in the centre by a cross wall, and having doors at the opposite ends, will suffice.

The out-door lavatory to consist of a well, surrounded by a broad and well-raised chabutra, but without roof or screen wall. A separate well for drinking water, and for culinary purposes, is only to be allowed when the lavatory-well does not afford a sufficient supply for all purposes.

As it is not customary to carry out post-mortem examinations in native hospitals, a simple enclosed shed, 12 feet square, will answer as a dead-house.

Day-rooms, order-
lies, &c.

Proposal No. 11.—Special accommodation is not necessary for day-rooms for the sick, for stores, hospital serjeant, or orderlies.

Conclusion of the Government of India.—The proposal is approved.

Plans.

Proposal No. 12.—That the proposed two plans of hospitals be approved.

Conclusion of the Government of India.—The Government of India approves generally of the plans, with the necessary modifications, to meet the conclusions regarding width of ward and running feet per bed.

The plan proposed by the Madras Commission is open to objection, in consequence of the position of the wash-houses and privies being immediately behind the two wings of the hospital, and because the projection of the central administrative offices would interfere with the ventilation of the wards.

The Government of India considers that the number of apartments, provided in the plan, for administrative and other purposes will all be required, but that the precise way in which they should be turned to account may be left to be determined by experience.

The foregoing are the conclusions upon the whole of the proposals brought forward by
Lieutenant

Lieutenant Colonel Crommelin; it remains only to specify the number of patients to be provided for in the hospitals for regiments of infantry and cavalry.

Infantry—

Full regiment - - - - - 50 beds.

Cavalry—

Full regiment - - - - - 25 „

Wing at head quarters - - - - - 13 „

Detached wing - - - - - 12 „

When a squadron is detached—

Head quarters - - - - - 17 „

Detachment - - - - - 8 „

APPENDIX IV.

GENERAL ORDERS of Government and of the Commander in Chief, relating to the Sanitary Condition or Comfort of the Troops.

(Published during 1866.)

Issue of *kunaths* to the field latrines. G. O. C., No. 6 of 4th January 1866.

Employment of serjeant cooks in regiments. G. O. C., No. 54 of 15th January 1866.

Fixing September as the time of annual works exhibition in each year. G. O. C., No. 163 of 14th February 1866.

Conservancy establishment for native regiments having latrines sanctioned. G. O. C., No. 305 of 28th March 1866, and No. 1069 of 3rd December 1866.

Placing the cantonments of Mhow, Neemuch, and Nuseerabad under the Bengal Government. G. O. C., No. 494 of 28th May 1866.

Instructions for the guidance of committees on rations. G. O. C., No. 527 of 11th June 1866.

Soldiers to wear helmets when out of doors. G. O. C., No. 768 of 3rd September 1866.

Issue of soap, as an experimental measure for one year, to the sick in European hospitals. G. O. C., No. 815 of 19th September 1866.

Supply of beds and pillows to troops on board ship. G. O. C., No. 935 of 24th October 1866.

Issue of oil for staff serjeants. G. O. C., No. 1042 of 27th November 1866.

Establishment for lighting. G. O. C., No. 1068 of 3rd December 1866.

Conservancy establishment for native infantry regiments.

Permitting the last issued *satrunjee* to be taken on board ship. G. O. C., No. 1146 of 26th December 1866.

Appointing the port surgeon a member of the committee for survey of transports. G. G. O., No. 10 of 5th January 1866.

Money prizes to regimental workshops. G. G. O., No. 25 of 12th January 1866.

Annual invaliding committee rules. G. G. O., No. 80 of 6th February 1866.

Cholera patients, how to be encamped. G. G. O., No. 94 of 9th February 1866.

Meat-safes and towel-racks to European hospitals. G. G. O., of No. 118 of 20th February 1866.

Accommodation for native troops and their families on board ship. G. G. O., No. 183 of 16th March 1866.

Issue of an English blanket (in addition to the double country one, now supplied in the plains) to each European soldier, while at the Sanitarium at Mount Aboo or Poorundhur. G. G. O., No. 187 of 20th March 1866.

Rules for the subsistence and maintenance of European prisoners. G. G. O., No. 261 of 23rd April 1866.

- Swabs for washing stone floors of barracks. G. G. O., No. 267 of 25th April 1866.
- Issue of warm clothing to native troops ordered for duty to Andamans. G. G. O., No. 336 of 30th May 1866.
- Issue of *numda* mattresses to European troops. G. G. O., No. 368 of 20th June 1866.
- Supply of lamps and oil to the schools of batteries of Artillery.
- Issue of charcoal. G. G. O., No. 417 of 18th July 1866.
- Supplementary conservancy rules. G. G. O., No. 455 of 7th August 1866.
- Tea-strainers and coffee-mills and roasters for European troops. G. G. O., Nos. 475 of 15th August, 526 of 29th October, and 653 of 23rd November 1866.
- Allotment of the number of men to European soldiers' tents. G. G. O., No. 511 of 7th September 1866.
- Establishment and furniture for lighting barracks. G. G. O., No. 525 of 13th September 1866.
- Revised establishment for a regiment of British Cavalry and Infantry. G. G. O., No. 547 of 26th September 1866.
- Issue of oil, "all night," to serjeant-major and quartermaster-serjeants of isolated batteries of Artillery. G. G. O., No. 557 of 5th October 1866.
- Embarkation rules for troops. G. G. O., No. 592 of 24th October 1866.
- Dressers for barrack cook-houses. G. G. O., No. 593 of 25th October 1866.
- Addition of essence of beef to the reserve stock in hospital. G. G. O., No. 666 of 5th December 1866.
- Issue of galvanized iron pails, in lieu of raised sinks, for small cook-houses. G. G. O., No. 668 of 5th December 1866.
- Supply of bedding to European troops on board ship. G. G. O., No. 686 of 12th December 1866.

APPENDIX V.

Separate G. O. C., p. 35, paras. 11 to 13 and 16, and pp. 36 and 37, paras. 34 to 49.
G. O. C., No. 278, 16 March 1865.

RULES Supplementary to those already Existing, as per Margin, for the better Conservancy of MILITARY CANTONMENTS in this Presidency.

Board of health.

1. THE conservancy of every station is under the regulation of the Board of Health, composed of the senior regimental officer, the senior executive medical officer, and the executive engineer, with the station staff-officer as secretary and executive officer.

Duties of Board.

2. The duties of this Board are to exercise a strict supervision over the conservancy arrangements throughout the station, and to watch the working of station and regimental conservancy establishments.

Weekly reports to be made to the Board.

3. The Board will require weekly reports from the following officers, to the effect that the parts of cantonments over which they have control, and are responsible, have been inspected, and are kept clean:—

For church compound and graveyard.

Chaplain.

For drainage, workshop and yard, as well as for Government or contractor's brick-kilns.

Executive engineer.

For Sudur or station bazaars, and all places under them, such as public latrines, &c.; also staff lines, merchants' quarters, and all other parts of cantonments not under any regimental or departmental authority in particular.

Cantonment magistrate or officers in charge of bazaars.

Bakery, slaughter-house, cattle-yards, and their vicinity.

Commissariat officer.

For barrack-yards, officers' quarters, barracks, hospital privies, urinaries, &c.

Regimental, commanding, and medical officers.

Board to report monthly.

4. The Board is to report monthly on the sanitary state of the cantonment generally, for the information of the divisional or district commander. The report to be forwarded through the officer commanding the station.

Extra conservancy establishment.

5. All questions involving extra conservancy establishments, whether for cantonments, or regiments

regiments in quarters, should be reported on by the Board, previous to being submitted to the officer commanding the division or district, for disposal, by the officer commanding the station.

6. Station conservancy establishments are allowed for the various cantonments in the Presidency, in addition to the regimental establishments. A fixed proportion of the charge will be borne by Government at each station, the remainder being defrayed from the cantonment fund. Cantonment conservancy establishment.

7. It is left to the discretion of the Board to distribute the station carts and establishments laid down, as may be considered best for the attainment of the object in view. Their distribution.

8. The proportion of the pay of the establishment to be borne by Government is to be drawn in the usual manner in bills on the pay department, by the officer in charge of the conservancy establishment. Mode of drawing their pay.

9. On the march of a regiment or detachment, a certificate, signed by the officer commanding the regiment or detachment, and the barrack master, that the whole of the regimental lines are left in a clean and habitable state, must be sent to the secretary for the information of the Board of Health. March of troops.

10. It must be considered the duty of every officer or resident in a station to bring to the notice of the Board, in a memorandum to the Secretary, any sanitary irregularity that may happen to come under his observation. Reports of sanitary irregularities.

APPENDIX VI.

DIET TABLE for MILITARY PRISONERS above a Month in Prison, and at Hard Labour.

<i>Daily—</i>	<i>Oz.</i>
Meat without bone - - - - -	8
Bread - - - - -	16
Succulent vegetables and potatoes - - - - -	8
Soojee, for gruel at night - - - - -	3
Rice, for gruel in the morning - - - - -	3
Sugar, for soojee gruel - - - - -	$\frac{1}{2}$
Salt - - - - -	$\frac{2}{3}$
Black pepper - - - - -	$\frac{1}{32}$

Thrice a Week—

Pearl barley, for soup - - - - -	2
Vegetables, onions, &c. for soup - - - - -	2

Gruel, it is proposed, should take the place of tea and coffee, as it does in the Bombay prisons. It adds to the nourishment, which tea and coffee do not; while the nervine virtues and supposed power of these to check excessive waste of the body ought not, under the circumstances, to be required.

APPENDIX VII.

ANALYSES OF WATERS.

KIRKEE.		In Imperial Gallons.	MAUNDERDEO.		In Imperial Gallons.
WATER from Moota River.			WATER from the Well in the Garden.		
Drawn April 1866 :		Grs.	Drawn 1st June 1866 :		Grs.
Total solids, dried at about 300 degrees - -	11.34		Specific gravity - - - - -	1000.23	
Chlorine, estimated volumetrically - -	2.27		Organic matter - - - - -	-	1.40
Organic matter, estimated by permanganate of potash. -	2.45		Chloride of sodium - - - - -	-	1.49
Degrees of total hardness (Clark's scale) -	7.38		Sulphate of soda - - - - -	-	2.82
Degrees of permanent hardness - - -	.24		Carbonate of lime - - - - -	-	3.78
			Carbonate of magnesia - - - - -	-	.23
			Silica - - - - -	-	3.42
			Total Solids - - -		13.14
			Total Solids, dried at 300° - -		12.51
			Clark's degrees of hardness -		4.05
			No trace of nitric acid.		
POONA.			WATER from the Well close to the Bazaar.		
WATER from Moola River, above Poona City Bund.			Drawn 1st June 1866 :		
Drawn April 1866 :			Specific gravity - - - - -	1000.23	
Total solids, dried at about 300 degrees - -	10.89		Chloride of sodium - - - - -	-	1.72
Chlorine, estimated volumetrically - -	2.35		Sulphate of soda - - - - -	-	2.19
Organic matter, estimated by permanganate of potash. -	1.37		Carbonate of lime - - - - -	-	3.35
Degrees of total hardness (Clark's scale) -	-		Carbonate of magnesia - - - - -	-	.85
Degrees of permanent hardness - - -	3.5		Silica - - - - -	-	4.25
			Organic matter - - - - -	-	.84
			Total Solids - - -		13.20
			Total Solids, dried at 300° - -		12.65
			Clark's degrees of hardness - -		4.56
			No trace of nitric acid.		
WATER from Moota Moola River, at Jamsetjee Bund.			BARODA.		
Drawn April 1866 :			WATER from Well near Parade Ground.		
Total solids, dried at about 300 degrees - -	10.17		Drawn 17th May 1866.		
Chlorine, estimated volumetrically - -	1.67		Specific gravity - - - - -	1000.42	
Organic matter, estimated by permanganate of potash. -	2.14		Chloride of sodium - - - - -	-	2.70
Degrees of total hardness (Clark's scale) -	5.04		Sulphate of soda - - - - -	-	.87
Degrees of permanent hardness - - -	1.82		Carbonate of soda - - - - -	-	3.82
			Carbonate of lime - - - - -	-	2.90
			Carbonate of magnesia - - - - -	-	9.82
			Silica - - - - -	-	2.80
			Organic matter - - - - -	-	1.40
			Total - - -		23.77
			Total Solids, dried at 300° - -		23.17
			Clark's degrees of hardness - -		14.9
			No trace of nitric acid.		
WATER from Poona Gaol Well.					
Drawn 31st October 1866 :					
Specific gravity - - - - -	1000.28				
Organic matter - - - - -	2.25				
Chloride of sodium - - - - -	2.96				
Carbonate of Soda - - - - -	1.23				
Carbonate of Lime - - - - -	8.23				
Carbonate of magnesia - - - - -	2.59				
Carbonate of iron - - - - -	Faint trace.				
Silica - - - - -	3.34				
Sulphate of soda - - - - -	Faint trace.				
Total - - -	20.60				
Total solids, by evaporation, dried at 280° F.	19.32				
Clark's degrees of hardness - -	13.11				
No trace of nitric acid.					

ANALYSES OF WATERS—continued.

AHMEDABAD.

WATER from a Well on the East of Artillery Stackyard.

Drawn 12th July 1866 :

Specific gravity - - - -	1000·45
Chloride of sodium - - - -	3·47
Sulphate of soda - - - -	·23
Carbonate of soda - - - -	5·18
Carbonate of lime - - - -	4·48
Carbonate of magnesia - - - -	5·61
Silica - - - -	2·03
Organic matter - - - -	3·82

Total - - - 24·82

Total Solids, by evaporation dried at 300° 24·92

Clark's degrees of hardness - - 10·09

WATER from a Well near Hurry Naique's Plot of Ground.

Drawn 12th July 1867 :

Specific gravity - - - -	1000·53
Chloride of sodium - - - -	4·61
Sulphate of soda - - - -	·67
Carbonate of soda - - - -	8·66
Carbonate of lime - - - -	3·59
Carbonate of magnesia - - - -	3·00
Silica - - - -	3·85
Organic matter - - - -	2·06

Total - - - 29·56

Total Solids, by evaporation dried at 300° 30·10

Clark's degrees of hardness - - 6·59

WATER from a Well South-east of the Artillery Haystack.

Drawn 12th July 1867.

Specific gravity - - - -	1000·52
Chloride of sodium - - - -	4·10
Sulphate of soda - - - -	·41
Carbonate of soda - - - -	7·87
Carbonate of lime - - - -	3·77
Carbonate of magnesia - - - -	3·48
Silica - - - -	3·57
Organic matter - - - -	2·24

Total - - - 25·44

Total Solids, by evaporation dried at 300° 25·90

Clark's degrees of hardness - - 7·25

In
Imperial
Gallons.

BELGAUM.

WATER from the Fort Barrack Well.

Drawn 5th June 1866 :

Specific gravity - - - -	1000·49
Organic matter - - - -	-
Chlorine - - - -	-
Lime - - - -	-
Magnesia - - - -	-
Sulphuric acid - - - -	-

Total Solids, dried at 300° - - 23·87

Clark's degrees of hardness - - 9·86

No trace of nitric acid.

WATER from Fort Hospital Well.

Drawn 5th June 1866 :

Specific gravity - - - -	1000·53
Organic matter - - - -	1·68
Chlorine - - - -	5·33
Lime - - - -	3·44
Magnesia - - - -	1·26
Sulphuric acid - - - -	1·32

Total Solids, dried at 300° - - 29·86

Clark's degrees of hardness - - 8·80

No trace of nitric acid.

WATER from the European Infantry Barrack Well.

Drawn 5th June 1866 :

Specific gravity - - - -	1000·31
Organic matter - - - -	2·80
Chlorine - - - -	2·36
Lime - - - -	4·23
Magnesia - - - -	·54
Sulphuric acid - - - -	A trace.

Total Solids, dried at 300° - - 14·28

Clark's degrees of hardness - - 8·69

No trace of nitric acid.

KURACHEE.

WATER from Hubb River.

Drawn 24th December 1866 :

Specific gravity - - - -	1000·95
Chloride of sodium - - - -	40·14
Sulphate of soda - - - -	8·36
Sulphate of lime - - - -	19·40
Carbonate of magnesia - - - -	5·37
Silica - - - -	1·29
Organic matter - - - -	·24

Total - - - 74·80

Total Solids, by evaporation - 75·53

Clark's degrees of hardness - - 20·65

No trace of nitric acid.

In
Imperial
Gallons.

APPENDIX VIII.

RULES for the VENTILATION of TRANSPORTS.

(a.) There should be as few partitions as possible in the accommodation between decks that is allotted to troops. The partitions that are absolutely required should be of fixed louver boards, allowing of the free passage of the air.

(b.) There should be two ventilating shafts at the extreme ends of the portion of the ship, that is given up to the troops. Each shaft should be at least two and a half feet square, or should have a sectional area of six and a quarter square feet. The under end of the shaft should be flush with the lower surface of the upper deck. If the whole of the space between decks is occupied by the troops, unless the ship has a flush upper deck, the foremost shaft will have to be carried through the fore-castle by boxing, and the foremost shaft will have to be carried in like manner through the poop deck.

(c.) There should be four substantial metal tubular ventilators, reaching above the level of the bulwarks, and with moveable cowls, that may be easily trimmed, so that their mouths may always face to the leeward. Two of these ventilators should be firmly fixed on the starboard and larboard sides, about one-fourth of the total length of the troops' deck from the foremost end; and the other two, in like manner, at one-fourth the length from the after end. Each tube should be 18 inches in diameter, and its lower aperture should be flush with the lower surface of the upper deck, and should have a horizontal screen fixed below it, at a distance of nine inches. The screen should be broader than the aperture of the tube, and should extend beyond it on all sides. The interval of nine inches should be kept clear on all sides of the aperture.

Two more of these tubular ventilators should be added, and should be placed starboard and larboard, at mid-length of the troops' deck, when the number of persons exceeds 500.

(d.) There should be a deck scuttle 12 feet long and about 18 inches wide midway between the main and fore hatchways. This may be made by raising portions of the midship planks of the deck. This scuttle should have high combings to prevent water going below when the decks are washed, and the means of closing it in bad weather should always be at hand.

(e.) There should be booby hatches with sliding doors, to be put on the hatchways in bad weather.

(f.) At the sides of each hatchway there should be canvas screens on rollers, and which may be let down as a protection to those near from chilling winds.

APPENDIX IX.

RULES for the TREATMENT of SICK TRAVELLERS by VILLAGE PATELS.

1. It is the duty of the police patel to assist any traveller, whatever his race may be, who from sickness is unfit to continue his journey, and especially not to allow the sick traveller to suffer from want of shelter, of food, or of attendance.

2. On hearing of any such person having arrived at the village, or being on the road, or in the fields, in a helpless state of sickness, the police patel should at once ascertain all the circumstances of the case.

3. The sick, helpless traveller should be taken to a *dhurumsala* or *seraee*, or to other available shelter, and the police patel should ensure that he is supplied with necessary food and water, and such other aid as his sickness may require, and as can be given. He should protect the sick person's property from theft.

4. The police patel should at once send a messenger to inform the friends of the sick man of his condition, if they are in the same *talooka*, or in any village not more distant than if they were so. Otherwise he should, without delay, report all the circumstances of the case to the *faujdar* or *mamlutdar*, who will acquaint the friends with the traveller's state, or if necessary, will arrange for his removal to hospital or to his home.

5. If the sickness of the traveller is cholera, he should be accommodated outside the village in a vacant building, if there is one procurable, or, if there is no such building, he should be sheltered as well as possible with a *pal* or tent, or a booth under a tree, but not near a well or a tank. The police patel should arrange also that the sick person has an attendant, and that all his wants are supplied.

6. The *lota* of a person ill with cholera must not be used in drawing water for him from the well or tank. The water he requires must be drawn otherwise, and then poured into his own *lota* or cup.

7. The

7. The surface earth of any floor, on which a person sick with cholera has lain, should be scraped off and buried at a distance from water or houses, in a hole dug for it in the ground, and a hole should be dug for the sick man's vomit, and other discharges.

8. In the absence of the police patel, the revenue patel should carry out these rules.

9. The patel should be allowed to send the mamlutdar a memorandum of expenses incurred, which, if found correct and reasonable, should be paid, in the event of there being no friends of the sick man able to defray the charges.

INSPECTION REPORTS.

REPORT of the INSPECTION of the CANTONMENT of AHMEDABAD.

(Inspected on 17th January 1866.)

PRESENT :

A. H. Leith, M. D., President.

Colonel H. W. B. Bell, R. E., Member.

T. B. Beatty, M. D., Member and Secretary.

The cantonment of Ahmedabad is in latitude 23°, and is in British territory in Goozerat, on the left bank of the Sabarmuttee river. It is about 60 miles from the shore of the Gulf of Cambay, and only 155 feet above the high spring-tide sea-level. There are no hills within a distance of many miles, and the level country around is under cultivation, its chief produce being cereals, oilseeds, and pulses.

2. Ahmedabad has railway communication with Bombay and Baroda, the former being 306 miles distant and the latter 61½ miles. The railway passes close to Bulsar, which has been resorted to for several years past, in the hot season, as a coast sanitarium. The distance of Bulsar is 185½ miles. The communication with Deesa, which is about 93 miles to the N. N. W., is by an unmade, sandy road. The hill sanitarium of Aboo is about 50 miles north-east of Deesa, and the road to it also is not made.

3. The Sabarmuttee, at about a quarter of a mile north of the cantonment, runs westward, and then, taking a southerly direction, forms the western boundary of the military station for about a mile and a half, and flowing on, it passes the city of Ahmedabad, which is a mile and a half from the southern limit of the cantonment. The average width of the river from bank to bank is here about 590 yards, but in the dry season the stream occupies only a very little portion of the channel, although it never ceases to flow except after great drought. The bed is of siliceous sand, and the water is clear.

4. On the south and east sides of the cantonment and on the strip between it and the river, to the northward, there is dry cultivation. The cantonment has an area of about 1,189 acres. The surface is level and even, except at the north-west corner, where there are deep watercourses near the river. The soil is sandy, and water is found at about 30 feet below the surface. There is a considerable number of trees, and the officers' quarters in the centre of the cantonment, and the Native Infantry lines on its west, are the parts most shaded by them.

5. The yearly rainfall is about 23 inches, and in the early part of the south-west monsoon it is not sufficient to subdue the great heat that is caused by the nearly vertical sun in its tardy progress in the neighbourhood of the tropic.

6. There are no thermometric observations on record of sufficient accuracy to allow of the temperature of the seasons being satisfactorily deduced from them. There are no special arrangements made at the hospitals to obtain the maxima and minima of the temperature of the external free air. The direction of the wind cannot be satisfactorily ascertained from the inexact records of the hospitals. Those records tend to show that wind from the south of west are most prevalent. At Deesa the result of observations, extending over several years, shows that the south-west is the point from which the wind chiefly blows in the hot season, and, as there is only an unobstructed plain between the stations, what has been ascertained regarding one may be assumed as applicable to the other.

7. There is good ground for a cantonment on the right bank of the river, where the remains of the lines of the Goozerat Horse still exist, and between those lines and Dhoolia Kote, where the annual practice of the artillery takes place. Were it found necessary, for strategic or other reasons, to remove the troops from their present ground, that on the right bank might be occupied, with the advantage of the troops being more removed than they now are from risk of participation in the epidemic diseases of the neighbouring city population.

8. The European troops at Ahmedabad consist of the head-quarters of a brigade of artillery, a field battery and two divisions of another battery which has latterly been stationed there instead of at the more unhealthy cantonment of Baroda, to which place, however, it sends a division that is relieved monthly.

9. The admissions into hospital from all causes during the year 1865 were 227 per cent. of the strength, and from fever they were 56, or more than half the strength. From dysentery they were $3\frac{1}{2}$ per cent., and 16 per cent. from diarrhœa.

10. The artillery lines occupy the south-east part of the cantonment. There were barracks for single men, all with the same, nearly south-west, aspect. Two of those barracks are in line, and have an interval of 50 feet between them; the third is 660 feet to the left front, or south of the nearest of the two. The married men's quarters were in echelon, each with the same aspect as that of the single men's barracks. There were three blocks, built in parallel lines, which were about 150 feet apart; the distances of the blocks from corner to corner being 180 feet, and the distance of the nearest block from the single men's barrack in front of it was about 540 feet. The horse lines were 380 feet to the left rear of the most southerly barrack of the single men, and the Native followers' lines were south-east of the horse lines. A Romish chapel and the canteen stood between the family quarters and the barracks. The plunge bath is a little more than a furlong westward of the barracks, and the hospital is about three furlongs distant in the same direction, and about 200 yards from the river.

11. *The Single Men's Barracks.*—They are ground-floor buildings of the description of those provided for the Persian Field Force. The walls of one are of sun-dried brick, and those of the others of burnt brick, with mud instead of lime mortar. In one the floor was of brick laid in lime mortar, and in the others it was earthen; the work of laying the present floors with pavement of a rather soft sandstone was in progress. The verandas in front and rear are $10\frac{1}{2}$ feet wide, and have earthen floors; the floors were wet where the filters stood. The roofs are tiled, and have a raised portion, to afford a continuous ventilating opening eight inches wide, over which the eaves project three feet. The side openings of the barrack are doorways and windows, the latter are 3 feet by 4 feet clear of the frame; they have glazed casements opening inwards. There was a cot between every two side openings, and it had eight feet running measurement. The barrack rooms are all 22 feet wide, and $15\frac{1}{2}$ high to the top of the side wall. There is a row of posts along the middle of the room giving support to the roof. The lengths of the men's barrack rooms vary from $247\frac{1}{2}$ to 254 feet.

12. *Serjeants' Quarters.*—There are quarters for two serjeants at each end of all the buildings. The quarters are under the slope of the roof, being partitioned off at the last centre post, and consist of two rooms for each, with dimensions of about 11 feet by $10\frac{1}{2}$ feet and 11 feet by $8\frac{1}{2}$ feet, but they vary a little; the two rooms are separated by a wall only seven feet high; the outer walls are of the height of the veranda post plate, or $8\frac{1}{2}$ feet. These rooms have glazed windows, but, besides these and the doors, they have no means of ventilation. There are green coloured bamboo screens to shade the verandas of the barracks, and punkahs are used in the barrack rooms in the hot season.

13. *Serjeants' Mess-room.*—The sun-dried brick barrack had about a fourth of its length partitioned off by a wall reaching to the beam, to form a serjeants' mess room, $187\frac{1}{2}$ feet being left as dormitory accommodation for the men. The accoutrements were liable to be attacked by white ants, when hung against the wall in this barrack.

14. There were no dining or day-rooms for the men. A serjeants' quarter in one of the barracks had been converted into a library and reading-room. Plans for a fives court and skittle alley were said to be under preparation. There was an existing skittle alley, the property of the artillery brigade.

15. An *Ablution-room*, *Cookhouse*, and *Latrine*, according to plans before approved of by the Commission and sanctioned by Government, were under construction.

16. *Canteen.*—This building is of brick and lime mortar, on a two feet plinth. The principal room is 30 by 20 feet, and its height is 15 feet. Adjoining to its end there is a liquor store 10 feet long. These two rooms are paved with brick, and the open veranda on the south-west side, which is $9\frac{1}{2}$ feet wide, has a floor of Portland cement, which was found to be out of repair. In the canteen, at the inspection, there was the cot of a soldier, who said he slept there to guard the liquor.

17. The coffee-shop was a temporary thatched hut, in the rear of and near the barracks.

18. Additional temporary accommodation was being constructed, to allow of each man having 90 superficial feet of floor; the addition consisted of two barracks, each to hold 24 men and a serjeant. Day-rooms were included. It was arranged that the two new buildings should be placed, one in the interval between the more southerly of the two old adjacent barracks and the old barrack standing alone, forming an echelon with them; the other new barrack in a line with and to the southward of the old barrack nearest to the gun-shed.

19. *Family Quarters.*—Each of the three blocks has accommodation for six families.
The

The buildings are on plinths that have an average height of one foot, but that in some parts are but eight inches high; they are of brick and lime, and are tiled and have brick floors. On the south-west side only is there a veranda; it is $7\frac{1}{2}$ feet wide, and has a dwarf wall; the post-plate is nine feet high.

20. Each family has a front room 16 feet by 12 feet, with a height of 12 feet measured to the top of the side wall, and a back-room 16 feet by 10 feet, with its rear wall only $7\frac{1}{2}$ feet high. The partition between the rooms is built up to the slope of the roof. The front and rear rooms have their communication by a doorway, with a plank or panelled door. Each room has a door with a moveable fanlight and glazed window, and the ventilation depends altogether on these being opened by the inmates. Wet *tattees* were used during the hot season. The two end quarters of each block have bath-rooms attached to them.

21. In rear of each range there is a common cook-house without a chimney, and with a large recently constructed masonry cesspit adjoining it. In a line with the cook-house there are two ablution rooms under one roof. There is no drainage provided for these.

22. Farther in rear, at about 72 or 75 feet distant from the block, there are two latrines, about 50 feet apart, one for men, the other for women; each has two seats, and at the end of the men's privy there is a urinary. A masonry cesspit has recently been constructed in rear of each of the latrines. Two additional blocks of quarters were about to be built, in positions that would change the echelon arrangement into a quincunx.

23. *Staff Serjeants' Quarters*.—These non-commissioned officers are very badly accommodated in temporary thatched huts, which are unprovided with proper ablution or other subsidiary conveniences.

24. *Quarterguard*.—It is on a line with the most southerly barrack, and in front of the other two. It is a new building of brick and lime, and double tiled, on a plinth two feet high, and with an open veranda on all sides 10 feet wide, and with the post-plate $8\frac{1}{2}$ feet high. The inner dimensions are, a width of 20 feet, a height of $15\frac{1}{4}$ feet, and a partition wall divides the length into portions of 30 feet for the room for the guard, and 10 feet for a lock-up. The floors of the rooms are of concrete. There are no roof-ventilators. The side openings of the guard-room are partly doors, partly unglazed windows with plank shutters, opening inwards. There were 12 cots in this room, for each of which there were only 50 superficial feet and 775 feet of space.

25. In the *Lock-up* there were four barred, unglazed windows with shutters opening inwards, and a plank door opening into the guard-room. There were four cots in this detention-room, for each of which there were the same superficies and space as for those in the adjoining room. It was said that even more than four men were known to have been shut up together in the lock-up.

26. There are a new privy and a urinary under one roof for the use of the guard; the former has one seat, but it is not adapted for the new pattern soilpan. The floor was of earth, but it was intended to lay it with brick pavement. The ventilation was effected by honeycomb masonry.

27. The *Solitary Cells* are directly to the windward, or south-west of the quarterguard, and at a distance of about 150 yards from it; they are six in number, and are built in two rows, $13\frac{1}{2}$ feet distant, and with intervals of eight feet laterally between cell and cell, those of the front row exactly covering those behind, while the building for the accommodation of the guard is nine feet to the windward of the middle front cell; they are on high plinths, and are built of brick, with tiled roofs and earthen floors. Each has a floor of only 10 feet square, and the walls are 20 feet high. There is no ceiling. The doorway is on the south-west; there is an iron-barred door as well as one of plank. There are three ventilating openings in the walls, each six inches by three, on the level of the floor; and on each of the four walls, at a height of 18 feet, there is a circular ventilating opening $1\frac{1}{2}$ foot in diameter. There are no verandas to protect the walls from the heat of the sun's rays. The only defence from the weather is a bonnet over the doorway.

28. In each cell there is a concrete sink in one corner, on which either the water jar or the urinal was placed; in the latter case the earthen floor was rendered damp or muddy by the water, and the urinal was even more offensive from the lime mortar under it being wetted, than it otherwise would have been. The urinal was of the old pattern; a globular iron vessel on a wooden trestle.

29. The *Guard-room* at the cells is built of brick and mud mortar on a raised plinth, with an earthen floor and double tiled roof. There is an open single tiled veranda in front and at the ends. There is no roof ventilation. The side openings consist of two doorways and four small unglazed windows, with plank shutters. There are two privies of two seats each for the prisoners and the guard. They have no soil pans, and have merely sloping pavement under the seats.

30. *Harness-room*.—It is near the horse lines and beside the gun-shed and workshops.

31. *Hospital*.—It is an enclosure adjoining that of the hospitals of the Native Infantry regiments. Its aspect is not favourable, being about a point and a half to the west of south. The building is on a plinth but one foot high, and at one part no more than nine

inches, and has a ground floor only. It is of temporary construction; the walls are of sun-dried brick, the floors of earth. The roof is double tiled, excepting over the verandas, where it is but single.

32. There are two wards for male sick; one is 80 feet long, 24 feet wide, and 17 feet high to the beam; the other, with the same width and height, has a length of 20 feet. There are two half-glazed doors, and six glazed windows on each side of the larger ward. There is cloth ceiling, but there is a continuous opening four feet wide in its middle, extending the whole length of the ward, which allows of the free action of the continuous roof ventilator. The rooms are provided with punkahs. The clear opening of the doorways is 4 feet by 7 feet, of the windows only 3 feet by 4 feet. The width of the windows at the inner part of their splay is $4\frac{1}{2}$ feet, and from the centre of one pier to the centre of the next there are $8\frac{1}{2}$ feet, which is the running measurement that each cot has, with the floor superficies of 100 feet, which, in the present emergency, is to be allowed in existing hospitals.

33. The other ward is 20 feet by 24 feet, and in height 17 feet, and would accommodate four cots. The entire number that the two wards can hold, at the reduced rate laid down for existing buildings, is 22. The number of beds that are required for a field battery at Ahmedabad, in accordance with the recently published rule, is 20, if Ahmedabad is classed, as it has hitherto deserved to be, among the unhealthy stations. As two thirds of another battery is now stationed here, 14 beds should be available for its sick. The hospital accommodation required for all the artillery amounts to 34 cots, and, as the existing wards hold only 22, there is a deficiency of 12 cots. During the last year the number of sick in hospital rose to 30, a number which occasioned much overcrowding.

34. There is a third ward under the same roof, which at the time of the inspection was reserved for female sick.

35. There is an open, earthen floored veranda on both sides, with a height of nine feet to the post-plate. There are rolling bamboo screens as a defence from glare. The surgery and dispensary, which are enclosed portions of the single-tiled veranda, are ill-ventilated and at times oppressively hot.

36. The lavatory has a low masonry bench on which to place the copper basins that are used, but it has no fittings, nor is there any screened compartment for private ablution. The privy is a continuation of the same narrow building in which is the lavatory, and there is a door of communication, through which the sick pass from the one to the other room. There is, however, another door to the privy, but there is no veranda nor covered passage to shelter the sick, were they to use it.

37. There had been recent alterations in the latrine, and the seats were partitioned, but they had no doors nor front screens. There were iron soil pans, but the construction of the seats allowed of their being removed only from the front, so as to require the sweeper to come into the room for that purpose. There are seven seats, and over two of them there are windows that open objectionably close to the occupants' backs. The privy for the female sick is on the same plan, and has its windows in the same faulty position. There was a urinal in the men's privy, and the floor around it was wet and offensive. There is no roof ventilation.

38. The *Deadhouse* is a small, ill-lighted, unventilated, earthen floored room, in a low building, opposite and in view of the hospital wards.

39. An apprentices' new quarters were nearly completed. The building is on the west side of the small quadrangle formed by the offices in rear of the hospital; it is flat roofed, and consists of one room 12 feet by 10 feet, and is of little height; it has no veranda nor any conveniences.

40. The construction of a new temporary ward, for the treatment of the female sick, had been under consideration. This, when carried out, will leave the old female ward available for males.

41. *Native Infantry Lines*.—The streets were clean, and the huts of one of the two regiments had been recently rebuilt. There are no latrines for the Native troops, nor for the inhabitants of the Sudur Bazaar, and they resort to dry watercourses, appropriated by the brigade authorities for the purpose, in the north-west part of the cantonment. The nuisance caused by this arrangement is much complained of, and when the wind blows from that direction, the staff hospital and the left flank of the Native Infantry, which are nearest, cannot but be injuriously affected by it.

42. The Native Infantry Hospitals have no place in which the sick can bathe.

43. *Sudur Bazaar*.—There were enclosures, in which cattle were kept, that were in a filthy condition. The cantonment magistrate said that it was intended that the cattle should be removed from their present locality. On the bank of the river in rear of the bazaar there were huge accumulations of sweepings, which it was intended should be sold as manure. The places of deposit were most injudiciously chosen, both on account of the putrefying mass being so near to habitations, and because, during rain, the water flowing through them would contaminate the water of the river. It was said the manure would be removed before the ensuing rains.

44. Water for drinking and other purposes is drawn from wells, about 30 feet deep in the sandy soil, and lined with brick and lime masonry.

RECOMMENDATIONS.

In a climate such as that of Ahmedabad, where the heat during part of the year is very great, and where miasmatic disease is prevalent, it is very desirable that such improved accommodation, as recently has been approved of for the European soldiery, should, as soon as possible, replace the existing temporary and faulty buildings.

(1.) New upper floor barracks, with subsidiary buildings, all according to the standard plan, should be built for the European force that it is intended shall be kept at the station.

(2.) A new hospital according to the standard plan, with subsidiary buildings, and with a detached ward for the treatment of sick and parturient females, should be built. The accommodation to be provided in the hospital should be calculated according to the scale for "*unhealthy*" stations, and all the sick should sleep in upper-floor dormitories. The new hospital might be placed on the left flank of the barracks, instead of beside the Native Infantry hospitals, as the present temporary hospital is.

Pending the construction of the permanent buildings, it is desirable that the existing temporary buildings should be improved in some points, that affect the health and comfort of the men.

(3.) A large temporary recreation or day room should be provided, for the use of the men of the old barracks; it would require to be a detached building, because there is no room to add such accommodation to the barracks, without interfering with ventilation.

(4.) The part of the veranda of each of these barracks, where the water filter stands, should be paved.

(5.) The serjeants' quarters at the ends of the barracks should be ventilated into the adjoining verandas, by openings at the top of the walls, and by revolving glazed fanlights over the doors and windows.

(6.) The canteen should be lengthened, to give a room at one end for the non-commissioned officers. An open veranda should be added in rear of the building. The present store-room should be converted into a bar by opening the partition wall between it and the larger room by a wide arch with a sliding door. The veranda in front and in rear, opposite to the smaller room, should be enclosed as store-rooms. All the rooms should have ventilators at the top of the walls, opening into the verandas. It was suggested by the Commission at the inspection that the windows of the canteen-room should be converted into doors, and this has, it is believed, been already sanctioned.

(7.) The family quarters should have the roof ventilation which, it is understood, has been sanctioned. A ventilating opening should be made, 2 feet by 2½ feet high, in the partition wall between the front and back rooms. The arch head of the doorway between the two rooms should be left open.

(8.) The old cook-rooms of the family quarters should be provided with chimneys. Their cesspools should be removed; moveable pails would be sufficient for the fluid refuse. The contents of these pails should be carried away daily by a conservancy tank-cart.

(9.) The privy cesspools of the family quarters should be removed.

(10.) The bath-rooms of the family quarters should be drained by pipes to a distance, where the waste water, if not utilised, might be absorbed by the soil without nuisance.

(11.) So soon as the block plan of the permanent barracks can be prepared and approved of, new quarters for the staff serjeants should be planned and constructed. For the present exigency a detached temporary bath-room and privy should be erected for each.

(12.) The present size of the dormitory for the men of the quarterguard is by far too small; the partition should be removed, so as to add the small lock-up room to it; there would then be the regulation allowance of 80 superficial feet to each of 10 men, sleeping in the room. The bedding of those on sentry should be kept on shelves. A lock-up of authorised size should be added. The roof of the building should be ventilated. The casements of the room should be glazed. A small ablution-room should be given to the guard.

(13.) The present cells, which are too small and are much crowded together, should, unless they can be economically enlarged to the regulation size of 130 feet floor area, be replaced with others, so arranged that the ventilation of none should be obstructed. If they are capable of being enlarged, three of them might be reserved and provided with verandas, to screen the walls from the sun-heat, and might be provided with a shuttered recess separately ventilated, in which to keep the urinal. The floor of the cell should be paved, and there should be a ceiling of plank, with a free grated opening for ventilation. The middle cell of the front row and the two outer cells of the rear row might be removed. The guard-room should be removed and rebuilt elsewhere. An ablution-room should be provided for the cells.

(14.) The hospital should be enlarged, so as to afford dormitory room for the full complement of sick of one field battery, and two-thirds, at an unhealthy station; in all 34 men, and to give a day-room for the sick.

(15.) A female ward, with south-west aspect, and with matron's quarters and subsidiary accommodation, should be provided.

(16.) The veranda of the hospital should be double tiled, and the surgery and other veranda rooms should have large openings into the veranda high in the wall.

(17.) The cesspool of the hospital cook-house should be removed, and moveable pails should be used for fluid refuse.

(18.) A veranda, or covered passage, should be constructed along the west side of the building which contains the lavatory and privy, and the door on that side of the privy should be used by the sick, instead of their passing through the lavatory.

(19.) The seats of the privy should not only be separated by partitions from one another, but each should have a front screen. They are at present too high, and should be lowered. Alterations should be made so as to allow of the soilpan being removed from behind. There should be roof ventilation. The windows should be placed otherwise than close over the seats. The floor should be paved.

(20.) The lavatory should have two screened bathing-places, with doors for privacy, one for a tub bath, the other for a shower bath, which should be fed from an elevated cistern, in the way being carried out in the barrack lavatories. The washing basins should be supplied from the cistern through bib-cocks.

(21.) The waste water of the lavatory should be conveyed to a distance by pipe-drain.

(22.) The cesspools of the hospital privy and of the hospital serjeants' quarters should be removed.

(23.) Such alterations, recommended for the men's privy, as may be applicable, should be made also in the privy that has hitherto been used by the female sick.

(24.) The room which has recently been built for a medical apprentice should be converted into a dead-house, with the arrangements recommended for such buildings at Poona.

(25.) The building facing the rear of the hospital, and at present used as a dead-house, might be converted into apprentices' quarters.

NATIVE INFANTRY LINES.

(26.) A bathing-room should be constructed for each of the Native infantry hospitals. It might be erected in each case, under a prolongation of the roof of the store-room, at the north corner.

CANTONMENT.

(27.) Latrines for males and for females of the two regiments, and for the population of the bazaar, should be erected.

(28.) The objectionable cow-houses, if not already removed to a distance from the populous parts of the cantonment bazaar, should be so at once, and cleanliness should be strictly enforced in them.

(29.) The accumulated sweepings, if not already removed from the bank of the river, should be removed without further delay.

(30.) The depositing of litter sweepings, or filth of any kind, should not be permitted on the river side, and should be restricted to some spot to eastward, at least half a mile from habitations.

(31.) It is very desirable that an arrangement should be made to supply both the troops and the city with pure water, raised from the river at a short distance above the cantonment.

(signed) *A. H. Leith, M.D.*,
Deputy Inspector General of Hospitals, President,
Sanitary Commission.

REPORT of the INSPECTION of the ARTILLERY LINES, BARODA.

(Inspected 10th January 1866.)

PRESENT:

A. H. Leith, M.D., President.
Colonel H. W. B. Bell, R.E., Member.
T. B. Beatty, M.D., Member and Secretary.

THE small subsidiary British force maintained by the Gaekwar, occupies a cantonment in the vicinity of the town of Baroda, but on the opposite or right bank of the Vishwamitree river. The country around is a level, rich, alluvial plain, fully cultivated and

and copiously wooded, especially so beside its numerous villages. The elevation above the high-tide sea level is a hundred feet at the neighbouring railway station. There is communication by railway with Bombay, which is $24\frac{1}{2}$ miles distant, the road passing by Broach, Surat, and Bulsar, and on the other side with Ahmedabad, $61\frac{1}{2}$ miles nearly north-west by north.

2. The cantonment has an extent of about 600 acres of even and nearly quite level ground, in most parts shaded with large trees. The alluvial soil is here, as it is in the district generally, rather sandy; and, although beds of rolled quartz and sandstone pebbles are met within excavations, no hard rock *in situ* has been found. Water is reached in wells at a depth of 30 feet to 35 feet.

3. There is no series of trustworthy meteorological observations available for reference, those made in the hospitals being likely to mislead. The average rainfall is said to be 35 inches, and the prevailing wind during the hot season, blows from about the south-west. At that season the heat is oppressive.

4. The Vishwamitree river is sluggish and tortuous where it forms the eastern boundary of the cantonment. The usual width of its stream is about 25 yards, but it increases in the rains to about 65 yards. The right bank is rather low, and the river has been known to overflow it, and to lay under water the south and south-east parts of the cantonment, on which stand part of the officers' quarters, the Sudur bazaar, and the arsenal. About a third of the hospital compound was at the same time flooded.

5. The city is about half a mile to the south-east of the nearest part of the cantonment, and is approached by two bridges. It is very populous, and, on a cursory view of its by-streets, is seen to exceed in filth any town in the British territory under this Presidency that has been inspected.

6. The cantonment is somewhat elliptic in shape, with a very irregular outline. The Sudur bazaar, and a collection of huts called Kamateepoor, occupy the part nearest the city, and on the east of these there are the arsenal and the lascar lines. In the centre of the cantonment there are the officers' quarters, and at their east end there is the hospital compound, its buildings being 130 yards from the river. The artillery lines are towards the eastern part of the cantonment, with the nearest barrack 330 yards from the bank of the river. North of these stand the new lines of the Native infantry regiment. To the north-west and west of the artillery barracks there is the open parade ground, beyond which there are cultivated fields or gardens, and the Rewa Kanta and Baroda Residencies.

7. Within the military limits westward, there is a large unbuilt tank beside the Romish church and burial-ground, and the Jews' and Moosulmans'; the tank is about 680 yards from the artillery barracks.

8. There are open trenches in the neighbourhood of the barracks to carry off the south-west monsoon waters, and there are some raised footpaths from barrack to barrack, and leading to some of the subsidiary buildings.

9. There are four barracks of temporary construction, with an aspect N.W. by N. $\frac{1}{2}$ N. Two are built in line, with an interval of 275 feet; the other two are placed in echelon, with the more easterly of these, the first at 100 feet in rear of it, and covered by its left end; the second 50 feet in rear of the first, and leaving a clear passage from front to rear, between their ends, of 35 feet.

10. There are other four older, ground-floor barrack buildings of permanent construction, 100 feet to the rear, at right angles to that of the newer ones, and with an aspect much better suited to the prevailing hot season wind, being S.W. by W. $\frac{1}{2}$ W. One hundred and seventy-five feet further in rear are the guard-room, gun-shed, and canteen. The horse lines are about 500 feet from the nearest barrack, and their compass bearing from the buildings generally, is between the north and north-east points. The hospital is E.S.E. of the barracks, and close to its enclosure there are old mud huts that were formerly required for followers, but which are now either occupied by persons not belonging to the brigade, or vacant, and the receptacle of filth.

11. Two of the four barracks are on plinths, a foot and a half high, and the other two were built on three feet plinths, but the retaining walls of the plinths being thought insecure, their foundations have been ramped with earth to a height of two feet. The buildings are all otherwise alike. There was only one of the higher plinth barracks occupied at the inspection.

12. The walls are of burnt brick and lime pillars supporting the trusses, with the intervals filled with sun-dried brick; the roof is double-tiled, the floor is of concrete. There is an open eight feet wide veranda on all sides, with a brick floor. On the south side there is a false veranda of frames covered with bamboo matting. The floors of the barrack-room and veranda were out of repair, and the matted frames were tattered and untidy. The brick used in paving at this station was in all instances found to be ill-shaped and perishable.

13. On each side of the room there are 18 unglazed windows 3 feet by 4 feet, barred, and with plank shutters, and there are two doorways 4 feet by 7 feet. At each end there are a

doorway 6 feet by 7 feet, and two windows 3 feet by 4 feet, similar to those on the side, and made for ventilation, because the building was placed end to the wind. There is a ventilating opening, 18 inches in diameter, over each of the side doors and windows, and in the roof there are four large ventilators, each 10 feet long.

14. One corner of the room is partitioned off like a bunk, with a wall between five and six feet high, and communicating with an enclosed corner of the veranda, to afford quarters for a serjeant; it was occupied as a coffee-shop, and there was a charcoal fire burning in it.

15. The piers between the windows are seven feet in width, and only one cot was placed between every two openings, so that no man would have had less than 10 feet of running measurement, 100 superficial feet, and 1,550 cubic feet, had the piers of the room been fully occupied, but at the inspection there were but 31 of the detachment who slept in the barrack-room. The room was lighted with unshaded, or open, native lamps.

16. There is a *lavatory* with a masonry bench for basins, but without any fittings, or any privacy for bathing, and without glazed casements and covered passage from the barrack. This lavatory was not used as such, but as a place for storing grain for the horses, while the men used their washing basins in the barrack veranda, near the filter-stand. The earthen ramp was seen to be guttered, and muddy from the soapy water thrown on it. This irregularity, and the objectionable way in which the barrack and also the guard-room were lighted, were at once brought to the notice of the military authorities, and an order was consequently issued to rectify the evils complained of.

17. The other barrack on the three feet plinth was unoccupied and under repair; its concrete floor had been recently renewed. The other two barracks on lower plinths were also unoccupied at the time of the inspection, but, when the whole battery was at Baroda, one of these was divided into a schoolroom, schoolmaster's quarters, serjeants' mess-room, and a store-room, and the other was used as a theatre and lecture-room.

18. A new *latrine* had recently been constructed. It has 12 seats, separated by partitions, but without front screens. It is nearly 200 feet in rear of the occupied barrack, and almost on a line with, and between, the two older barracks. At the left rear of the front uninhabited barrack there is a urinary; it is 350 feet from the occupied barrack, and is not at that distance, likely to be resorted to, especially at night.

19. Besides that urinary, there is a *cookhouse* on the old plan, without a chimney.

20. On the left flank of the barracks there are *workshops* and a *library building*.

21. The *canteen* is on a two feet plinth, with walls of sun-dried brick, with pillars of burnt brick and lime-mortar to support the roof trusses. The roof is double-tiled, the floor is of brick, in bad repair. There is an open eight feet wide veranda on all sides. The centre room is 58 feet by 22 feet, and it is 15 feet high; it has four unglazed windows, and two doors on each side. At one end there is a spirit store, and at the other a *coffee-room*, which are separated from the centre room by partitions reaching to the tie-beam. Each of these end apartments has six windows and a doorway. A raised roof gives a continuous ventilating opening 10 inches wide, overlapped 2½ feet by its eaves.

22. The *quarterguard* has the same faulty aspect as the temporary barracks. It is a tiled building on a plinth only a foot high, and on that account it must be an unhealthy dormitory at this malarious station. It has a veranda on one side only, and it is but eight feet wide. The room for the guard is 40 feet by 18 feet and 13 feet high. The *lockup* is adjoining, and is entered from the guard-room. It is under the slope of the roof at one end of the building. Its dimensions are 18 feet by 9 feet; the only ventilation it has is by three barred windows, with clear openings 2 ft. 8 in. by 4 ft. 2 in. The floors are of concrete that had been lately laid down. At the south-west corner of the guardhouse there is an objectionable masonry urinal. At the time of the inspection the number of the guard amounted to four, and of these one was on sentry.

23. *Solitary Cells*.—There are six cells under one roof, with an open veranda 6 ft. 8 in. wide in front and in rear. Each cell is only 10½ feet by 6½ feet, or has little more than half the superficies that is now allowed.

24. Of the four old permanent barracks that face S. W. by W. ½ W., one was used as a schoolroom, another as a commissariat store-room; the most westerly had been partitioned for the accommodation of married men when the force was larger, and the most easterly is now divided into quarters for soldiers' families.

25. *Family Quarters*.—They are in the barrack last mentioned, which has a plinth only 1½ ft. high. It is 100 feet by 30 feet, with a front open veranda six feet wide, and a rear veranda of the same width, partly enclosed. The barrack is divided into eight quarters by transverse walls 12 feet high, or reaching only to the tie-beams, and every quarter is sub-divided by a canvas screen into a front room 18 feet by 11 ft. 9 in., and a rear room 12 feet by 11 feet, which open, by a door only, into the front and rear verandas. Every room has a ventilator in the tiled roof, like a dormer window, with merely a plank shutter that is opened and shut by means of ropes. There are no glazed windows. Four families were found in these quarters.

26. Detached from each end of this barrack, at a distance of 23 feet, there are two small

small buildings; each has under its roof two bathing-rooms, and two privies with one seat each. In the interval between the bath-rooms and the main building there is a cooking-place enclosed with bamboo work.

27. *Staff Serjeants' Quarters*.—There are detached quarters for a serjeant major, consisting of three rooms of the dimensions 18 feet by $14\frac{1}{2}$ feet, 12 feet by $14\frac{1}{2}$ feet, and 12 feet by $7\frac{1}{2}$ feet, with an open veranda $7\frac{1}{2}$ feet wide on one side only. The quartermaster serjeant's quarters have but one room $30\frac{1}{2}$ feet by 15 feet, and a seven feet wide veranda on one side only. There are also quarters for a farrier major. All have out-offices, but none of these staff quarters were occupied since the head quarters of the battery was removed to Ahmedabad.

28. *Hospital*.—There are three ground-floor hospital buildings in one enclosure, all of the same dimensions, 96 feet by 22 feet, with walls 16 feet high, and a veranda 9 feet wide. They are placed so as to form three sides of a rectangle, but the blocks are separated from one another by intervals of about 50 feet. The middle building, facing west by south, was unoccupied. The two others, facing each other, are the hospitals of the regiment of Native infantry and the artillery. Their aspects are north by west and south by east. The most northerly of the buildings is the artillery hospital.

29. The veranda plinth is one foot high, but the floor of the ward is a foot higher. The floor is of bricks, of imperfect shape and bad quality, laid in lime-mortar, and has recently been renewed, as a precautionary measure, after the former floor had been soiled with the discharges of the cholera sick, during the epidemic visitation of last year.

30. There are six windows, $3\frac{1}{2}$ feet by 5 feet, and two doors, 4 feet by 7 feet, on each side of the ward, and at each end a door, 4 feet by 7 feet. The piers between the side openings vary from six feet to $9\frac{1}{2}$ feet, and there are $13\frac{1}{2}$ feet of wall in each corner. On the ridge there are three ventilators 10 feet long, with louvre sides, partly matted up to exclude rain. Every window has bars, as in a prison, and has a plank shutter, but no glazed casement. The whole of the north veranda is enclosed, and it has glazed windows; this veranda is mostly used as a day-room; at its east end there is a store-room. At the south-east and north-west corners a dispensary and a surgery are formed by enclosing parts of the veranda. These rooms are 16 feet long and but 8 feet wide, and are each lighted and ventilated only by a door, and an unglazed window with a plank shutter.

31. Projecting from the north-east part of the building there is a *lavatory* 25 feet by 15 feet, and $7\frac{1}{2}$ feet high, with a masonry bench for basins of the inconvenient height of three feet. The room is without any fittings, or any screened bathing-place. It has a floor of concrete. There are no ventilating openings besides doors and windows. There are three glazed windows, 3 feet by 4 feet, on each side, and at each end there is a door, one of which opens into the enclosed veranda of the hospital, against which the room is built. There is no drainage for waste water.

32. The *hospital privy* is on the east of the building, and it is approached by a covered passage 96 feet long. The privy is 13 feet by 7 feet, and it has walls but $7\frac{1}{2}$ feet high. It has a door, and a window three feet wide, but partly closed with wooden bars. It is unventilated and dark. There are five seats without partitions. Iron soil-vessels were in use. An offensive urinal of the old pattern, on a wooden stand, was placed at one end of the latrine. There is a cesspool in the rear, but it was not in use.

33. The *dead-house* is objectionably near to the hospital; it stands eight feet from the north-east corner and between the lavatory and the cook-house. The earthen floor is not raised above the level of the outer ground, and it is out of repair. The dimensions of the building are 11 feet by 7 feet. It has a door on one side, and a window at each end, closed with mat-covered frames hinged above.

There is no furniture, and there is no convenience whatever for the performance of pathological examinations.

34. The *hospital cook-room* is placed between the dead-house and the privy, but nearer to the latter than the former. It is built on the old plan, and has no chimney.

35. The *female hospital* stands behind the north-east corner of the male hospital. Its aspect is about west by south. It has a plinth $2\frac{3}{4}$ feet high, and an open veranda nine feet wide on one side only. The main room is $33\frac{1}{2}$ feet by 22 feet, and its walls are 12 feet high. On one side there are four windows $3\frac{1}{2}$ feet wide, and on the other three windows and a door. There is a ridge ventilator 10 feet long, with louvre sides. The piers between the side openings are only $4\frac{1}{4}$ feet running measurement, which is inconveniently small for a cot. At one end there is a doorway $4\frac{1}{2}$ feet by 7 feet, and at the other there are two smaller doors that open into two wards, one $13\frac{3}{4}$ feet by $10\frac{1}{2}$ feet, the other $10\frac{1}{2}$ feet by $7\frac{1}{4}$ feet, under the slope of the roof. Under the slope of the roof at the other end of the building there are two small rooms, 8 feet by $6\frac{1}{2}$ feet, without fittings. There are a detached privy, a cook-house, and matron's quarters.

36. The middle unoccupied hospital building, with the west by south aspect, closely resembles the male artillery hospital which has been described. It also has a lavatory of like dimensions, built against its enclosed back veranda. Its privy is detached in rear of the lavatory, and communicates with the hospital by means of a long covered passage. The

plan of the privy is very bad, there being a sloping pavement under the seats, on which soil-vessels would not rest.

37. At the inspection there were only three men in hospital. The total strength of the detachment was 42 non-commissioned rank and file, and four women and five children. Since the outbreak of cholera last year the artillery force has been only one division of a battery, and it has been relieved monthly.

38. Baroda has always been a station at which there has been much sickness among European troops, and the mortality in some years has been exceedingly great from various causes, but in 1859 and 1865 it was mostly by heat apoplexy and by cholera. Last year cholera had been for some time prevalent in the neighbouring city before it appeared in the cantonment. The irregular occupation of the ground in rear of the Sudur bazaar, and of the ruinous huts between the hospital and the horse lines, greatly increases the liability to the spreading of epidemic sickness from the town to the troops.

39. It is desirable that no more European soldiers than are absolutely required should be stationed at Baroda; and it is highly desirable that those whom it is necessary to locate there should have all the advantages as to barrack and hospital accommodation that the lately-devised improvements can afford.

40. The drinking-water was from wells—one only 60 feet from the nearest barrack, and one but 30 feet distant; another of the wells was close to the hospital edge. Samples drawn from these wells, in May 1865 were examined, and found to contain nitrates, indicating long continued infiltration of impurities, and also a considerable quantity of recent organic matter, as was expected, because earth is well known to have only a limited power as a purifying filter, and to allow of organic matters being carried down from the surface of the ground by the rain that feeds the well.

RECOMMENDATIONS.

(1.) That upper-floor barracks be built, as early as practicable, for the accommodation of the European soldiers whom it may be found indispensably necessary to keep at Baroda.

(2.) That the barracks be built with a south-west aspect.

(3.) The best site for a barrack, to accommodate a detachment of the present strength, appears to be that of the now unoccupied left front barrack on a high plinth. The new building would have to be placed across the line of the present barrack. The trees that are at a short distance to the westward of the site should not be cut down, as they would in some measure lessen the driving of the dust blown along the ground in the hot season, and would afford a desirable shade, while they would not be high enough to interfere with the access of the breeze to the dormitory-rooms.

(4.) Were there any impediment to the speedy construction of a new barrack, and a necessity for the continued occupation of the barrack now in use, it would be desirable that it should at once have glazed windows. The coffee-shop should be removed, and proper serjeants'-rooms should be partitioned off.

(5.) A day-room should be made by partitioning the nearest unoccupied barrack, and connecting it with the present dormitory by a covered passage. Recreation-rooms or appliances should be provided according to regulation.

(6.) The lavatory should be completed with a raised cistern, from which fixed basins might be supplied with water by gravitation. The basins should have supply, overflow, and waste pipes. Two screened compartments should be made at one end of the room, with shower baths and the appliances for private ablution, that have been described in other inspection reports. The windows should be fitted with glazed casements.

(7.) The waste water of the lavatory and baths should be drained off by pipe to a distance, either to be utilised in gardening, or to be absorbed in the ground, where it would not be hurtful.

(8.) A covered passage from the barracks to the lavatory should be constructed.

(9.) The latrine should be completed with properly fitted soil-vessels, and each seat should have a diagonally-placed screen.

(10.) Urinaries of temporary construction, with bamboo walls, and with covered passages, should be placed near the barrack.

(11.) The cook-room should be improved by the construction of a domed fireplace with a chimney, and a raised sink in the veranda. The floor should be paved with stone.

(12.) The canteen floor should be repaired. The coffee-room should not be under the same roof with the liquor-room.

(13.) A separate refreshment and coffee room should be given. Accommodation might be found in a part of the barrack used as a theatre and lecture-room, or in that now proposed to have a day-room in it.

(14.) The aspect of the quarterguard cannot be altered, and, even if the other defects were remedied, the building would not, owing to that fault, be satisfactory. The defects that require to be rectified are the lowness of the plinth and walls; the former should be three feet high, the latter the standard height. There should be a continuous roof ventilator,

tilator, with sufficient overlap to prevent indrifting of rain. There should be a 10 feet wide veranda, and, above it, clerestory ventilators, with glazed revolving shutters, to exclude dust and rain; the windows should be glazed. The lock-up, which is at present unventilated, and under the slope of the roof, should have height of walls and ventilation equal to what are recommended for the guard-room. A better site for the guard-room would be found to the westward of the proposed new barrack.

(15.) With a new guard-room, new cells should be built according to the standard plan, and proportioned to the strength that is fixed for the detachment, but all should at this station have a three feet high plinth. Until new cells can be built, the present ones should be enlarged by removing partitions, so as to convert two into one. The guard-room should have a bamboo-walled urinary, with a regulation pail, instead of the masonry urinal.

(16.) New family quarters are urgently required; the present are not capable of sufficient improvement to fit them for habitation. The new quarters should have plinths at least three feet high, with ample opening between the front and back rooms, to allow of free perfilation. The edge of the veranda should be railed for safety. The new buildings might be placed where the most westerly of the old barracks now stands, if it were removed, otherwise immediately to the west of it.

(17.) The hospital used by the artillery is inferior in aspect to the middle building, which is vacant. It is very necessary that the European sick should be accommodated on an upper floor, and it is recommended that an upper floor should be added on the centre building for them, with accommodation in proportion to the strength of the detachment. There should be a wide veranda to it, to give protection from the sun's rays, free roof ventilation, and all the other arrangements that are ordered for the most recent hospitals, and of which the converted building may be capable.

(18.) If the building which has been mentioned be found unfit to be thus altered, a new hospital should be constructed; and in that case a better site than the present might be found, farther from the river.

(19.) The present hospital, while used as such by European soldiers, should have glazed windows for its wards, and for the dispensary and surgery; the last should have a large glazed casement in its north side. Each of those rooms should be ventilated into the veranda by large openings.

(20.) The lavatory of the hospital should have its masonry bench for basins reduced to 2½ feet. There should be a screened compartment made for a shower and for a tub bath. A raised reservoir should supply these and the basins by gravitation. The waste water should be drained off by pipes, as recommended for the barrack lavatory.

(21.) The hospital privy should be fitted with glazed soilpans, in seats partitioned and screened. It should have glazed windows to light it, and it should have roof ventilation. It should be paved with stone.

(22.) The cook-house should be provided with a chimney. It should be paved with stone.

(23.) The dead-house should be removed from its position close to the hospital, and should be reconstructed on an improved plan, to the eastward of the privy, if the strength of the detachment is to be larger than it is at present.

(24.) With the detachment so small as it is now, it would not be necessary to alter the female hospital; but should a large force be at the station, the partition between the two end rooms should be removed, to convert them into one ward. A veranda should be added to the back of the building, and two of the four windows on that side should be converted into doors. One of the three windows in the front of the ward should be converted into a door. The enlarged end ward should have doors opened into the front and back verandas, and should have large ventilating openings high in the walls, communicating with the veranda.

(25.) The extension of the Sudur and other bazaars should be discouraged, and squatters and unauthorised occupiers of huts and sheds should be at once removed from the cantonment. The remaining huts of the old Native infantry lines, to the windward of the barracks, and occupied by commissariat cattle, should be removed.

(26.) All the huts near the hospital should be removed, and no followers or others should be permitted to remain in its neighbourhood, excepting those belonging to the regular establishment, and they should be provided with quarters built according to regulation.

(27.) Water should be obtained by wells sunk at a distance from habitations, because experience proves that earth allows organic impurities that fall on the ground to pass into wells along with the water that filters through it.

(signed) *A. H. Leith, M. D.,*
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

Poona, 18 June 1866.

REPORTS on the CANTONMENT and MILITARY BUILDINGS at KURACHEE.
(Inspected in December 1866.)

PRESENT :

A. H. Leith, M.D., President.

Gordon Asher, M.D., Member and Secretary.

CANTONMENT at KURACHEE.

KURACHEE, at the south-west extremity of the Sind division of the army, has its communication with Bombay by sea, the distance being about 520 miles. It is connected with Hyderabad by a railway to Kotree, on the opposite or right bank of the river, and thence the communication with Upper Sind and the Punjab is chiefly by the river Indus. The garrison of Kurachee consists of a regiment of British infantry, a light field battery, and the head-quarters of a brigade of artillery, and a Native infantry regiment. There is a depôt for troops arriving for and departing from Sind, and some of the Punjab stations, and at the close of the year the number attached to it is very large. Close to Kurachee there is the Sea Coast Sanitarium of Gizree, which it is proposed shall have accommodation for 200 men.

2. The Kurachee cantonment was originally larger than it is now, and it was included in one continuous boundary line. An error, which has been too common elsewhere, was committed in laying out this cantonment. There ought to have been secured between the men's barracks or lines and the town an interval on which no buildings might be erected, and which might be always maintained to preserve the soldiery from sharing in the communicable diseases that are fostered and propagated in the unclean dwellings of the poorer of the native population. But instead of thus providing by isolation for the protection of the troops from epidemic diseases, the Sudur bazaar was wrongly placed, not only too close to the men's lines and to the windward, instead of the leeward, as regards the prevailing wind, but also between them and the native town, thus helping to bridge over the interval that ought to have been kept clear.

3. From the time of the occupation of the country after its conquest, the whole of the land between the old town of Kurachee and the military lines was made available for building, and it was indeed only in that direction that the town could well be extended to meet the wants of the rapidly increasing mercantile population. It is to be regretted that, with such an extension in prospect, the welfare of the cantonment was not better provided for.

4. The Sudur bazaar rapidly grew to be a little town within the cantonment, with a population having no essential connection with the troops, but still under military rule, until the year 1862, when it, with a considerable portion of land, partly built on, and partly still unoccupied, was transferred to the municipality of Kurachee with the expressed intention of affording greater inducement to its being more fully built over.

5. By that transfer, the cantonment has been irregularly divided, and the artillery are now separated from the rest of the troops. The intermingling of military and civil boundaries, and the fact that the followers who hang about every cantonment, offering temptations to immorality, are here beyond military control, although in the immediate neighbourhood of the soldiery, give rise to dissatisfaction and misunderstandings.

6. Were it practicable to remove the Sudur bazaar, it should be done, but the re-acquisition by Government of the ground which has become the property of private individuals, and now bears a high market value, and is covered with streets of substantial, spacious, and expensively built houses, is what cannot be contemplated. Such a purchase would cost more than would the removal of the cantonment, for the purpose of isolation, to any required distance.

7. On a close inspection of the Sudur bazaar, and what is called the soldiers' bazaar, at the north end or right flank of the cantonment, they were found to contrast not unfavourably, as to conservancy administration, with what was seen within military limits. The scavenging and the sweepers' work, and even the use of lime as a deodorant, were well carried out. There are indeed grievous evils, that have been continued from the time that the bazaars were under military rule, and that seriously endanger the lives of the community by giving virulence to any epidemic disease. Such are the nearly universal use of cesspits, and the overcrowding that there is, both from houses being raised to an undue height, with reference to the width of the streets, by the addition of upper floors, and from the houses being subdivided for the occupation of a greater number of families and individuals than their size and ventilation safely admit. At present, the cantonment and municipal law are equally impotent to remedy the evils. In the new Cantonment Act, which has been drafted, power is given to deal with such nuisances, and to abate the immoralities that are complained of, but it is doubtful if it will provide sufficient funds to bear the expense of a thorough system of conservancy, such as the municipality

municipality is willing to carry out. There is a new Municipal Act in course of preparation, and it might be made, as regards nuisances, equally comprehensive with the proposed Cantonment Act. If the new municipal law gives the power for good that is now wanting, and if the conservancy administration continues as energetic as it now is, there does not appear to be reason to think that the welfare of the troops will be compromised by allowing the Sudur bazaar to remain under the control of the municipality.

8. The soldiers' bazaar is an isolated village of long parallel rows of mud-built huts and ill-constructed low houses, with floors on the same level with, or even below the level of the surrounding ground. The streets are unmade and uneven. The row of houses next to the military lines is in great part occupied by dairymen, whose cattle are generally picketed in the open air, but are in some instances kept in the unpaved enclosures of their houses. The northern line of huts is mostly inhabited by petty shopkeepers, while the intermediate part of the village is occupied by prostitutes. Cesspits are here also in extensive use, and the ground exhales an offensive odour because of them. To render this village wholesome, it should be rebuilt, but it would be better were it removed. It gives more ground for complaint than the Sudur bazaar.

9. The bakery of the contractor for bread to the troops was inspected; it is in the Sudur bazaar. The wheat is first imperfectly ground by mills driven by camels, in low confined hovels in a small yard, made most offensive by those animals being kept in it. The crushed grain is then carried in carts, open to dust and all impurities that may fall on it, to the bakery in another street, and is there sifted. What has been insufficiently crushed is sent back to the camel-mills, and after further grinding is carried again, still exposed in the open cart, to the bakery in Malvery-street. The meal is then ground to the form of *soojee* by hand-mills in a small room, where the atmosphere was most offensive owing to the unwashed condition of the bodies of the men at work. From the hand-mills the *soojee* is transferred to women to be sifted. They sat in a room that had a floor-cloth, but they were in their ordinary unclean clothing, and the *soojee* or flour fell beside, or even upon their bare legs and unwashed feet. A kneading machine was on the premises, but its use had been discontinued, because it was said it did not answer. The machine appeared too ponderous to be efficiently worked by hand. The kneading was still performed by hand.

10. *Garrison Cells*.—They are in a yard enclosed with a low wall: they are six in number, and are arranged in a rear block of three cells and a front row of three separate cells; they are built of stone and lime, on a plinth two feet high. The roof is flat, the floor of the cell is paved, and that of the veranda is earthen. The veranda is $8\frac{1}{2}$ feet wide, and is tiled. In front there is a double door, the inner one barred, the outer plank, the arch-head is barred. There is a barred clerestory opening, and on the level of the floor, two openings of the shafts of the small wind-towers in the roof. In rear there is a window three feet from the floor, three feet by two feet, barred, and with a wooden shutter opening inwards; there is a higher barred window, and in the wall at different heights there are openings for ventilation, the lowest of those openings being $7\frac{3}{4}$ feet from the floor. The dimensions of the cells are 12 feet by 12 feet by 15 feet 9 inches.

11. In rear of the cells there are a privy and a lavatory.

12. Very near the enclosure of the cells there is a bungalow, which has become the property, it is said, of some private individual who does not belong to the garrison.

It is recommended that—

(a) In the Sudur bazaar, soldiers' bazaar, and civil lines, the use of cesspits be discontinued, such legal power to enforce this as is wanted being obtained; that it be obligatory to use soil-vessels in all privies; and that a sufficient number of tank carts visit daily, at appointed and suitable hours, all the streets, to remove the filth.

(b) That the height to which the walls of houses may be carried in existing streets be limited to two-thirds of their width, and that in all new streets their height be not more than half the width of the street. That the number of inhabitants in a house be in accordance with its size.

(c) That the soldiers' bazaar, if practicable, be removed. If impracticable, then that all decayed houses be removed, and all reconstructions be on plinths raised at least two feet above the level of the street. That the streets be made.

(d) That a steam bakery, under the direct management of the Commissariat Department, be substituted for the present bakery.

(e) In the garrison, as in all cells for convicted prisoners, bars, to which ligatures might be attached, should not be within reach at times when the prisoners are unwatched. The window therefore should be high enough to be beyond reach, and the barred door should be outside, not inside, of the plank door. A massive wooden sleeping bench should be firmly built into the masonry.

(f) It appears advisable that an unmilitary and private proprietary should not be allowed to be established in the neighbourhood of the cells.

ARTILLERY OR SOMERSET BARRACKS.

THE artillery lines are on the west side of the cantonment, and are separated from the rest of it by private dwellings and the Sudur bazaar, which are under the rule of the municipality of Kurachee. These lines, together with the arsenal and magazine, occupy an isolated spot of about 190 acres. On the north there are two old excavations, which are now pools or unbuilt tanks, which are empty in the hot season. The nearest is about 300 yards from the barracks; they are called the Ruttun *Tulao*. On the south of the barracks, at a distance of about 80 yards and within the military limits, there is a small watercourse, with uneven gravelly banks and a pebbly bottom, which carries off the storm waters that flow through the Sudur bazaar, but at other times is dry. Another and even smaller watercourse carries the surface drainage during rain in a westward direction from close in front of the family quarters and the horse lines. With these exceptions the ground is apparently even, but water is apt to lodge behind the barracks and at the south end of the hospital, and there are no trenches to carry it off.

2. The men's barracks stand nearly in the middle of the ground, and to the south and the west there is an open plain, unoccupied except by the huts of the Tent Lascars and their latrine (which is complained of); the overcrowded lines of the grass-cutters and the artificers of the arsenal have lately been removed. On the north-east there are the horse lines about 70 yards, the sick horses' stable only 18 yards, and the arsenal and barrack-stores about 170 yards distant. Eastward there are the subsidiary buildings, and on the south-east there are the officers' quarters.

3. The *Barracks* are three in number, and are built, after designs approved in 1847, of stone and lime mortar. They are in line, with intervals of $71\frac{1}{2}$ feet, and have an aspect nearly W. S. W. They have two floors, with a plinth originally two feet high, but now in some parts less, apparently from the accumulation of sand. The roof has but little pitch, and has only a single layer of tiles over a layer of clay mixed with chopped straw, such as is in general use at this station, and there is no ceiling with it.

4. The three barracks differ a little. Those on the flanks have pent tiled roofs over the $12\frac{1}{2}$ -feet-wide verandas of the lower floors; the centre barrack veranda has a flat roof, which forms a terrace, laid with pantiles, for those occupying the upper floor.

5. The measurements of the dormitories or upper rooms differ; in the right-flank barrack they are 135 feet by 24 feet, with a height of wall $13\frac{1}{2}$ feet; the centre barrack is 135 feet by 24 feet and 15 feet; and the left flank one is 136 feet by $25\frac{1}{4}$ feet by $15\frac{3}{4}$ feet.

6. The side openings are all windows, 4 ft. 10 in. by 3 ft. 9 in. in the clear of the frame, and with the sill from 3 ft. 10 in. to 4 ft. 4 in. high. The windows have the lower two-thirds closed with pannel shutters, and the upper third with a glazed frame revolving on a horizontal axis. There are fixed glazed fanlights. The piers between the windows in the two right barrack are 10 feet broad, and in the left flank barrack, owing to a difference in the splay of the windows, they are 10 ft. 9 in. From the centre of one window to the centre of the next the measurement in all is 15 feet. The wall in the corners has a running measurement of 7 ft. 9 in. One corner at each end of the dormitory is not available for a cot, owing to its being occupied with the entrance door. Besides the ventilation that is dependent on the doors and windows being open, there is none.

7. The floors are of plank, and the leaking of the seams causes inconvenience on the lower floor.

8. The access to the upper floor is by a stair at each end veranda, it is only $4\frac{1}{2}$ feet wide, and in two barracks is of wood, and in the left flank barrack it is of stone, and in this the steps are much worn and very uneven. The stair rises through the pent roofs of the tiled verandas, and in all the barracks it is much exposed to the weather. There is no veranda to shade the walls of the upper floors, and there are not even weather-screens for the windows.

9. There are nine windows on each side of the dormitories, and therefore eight piers from 10 ft. to 10 ft. 9 in., against which two cots may be placed with the regulated $7\frac{1}{2}$ running feet for each, and there are two corner places, one side available, in each of which one cot may be placed. Although the wall measurement of the corner, being 7 ft. 9 in., is in excess of what is required for one cot, yet it would not be allowable to place two cots in a corner where the occupant of one, besides being too near the occupant of the other, would have to breathe the air which had been vitiated by him.

10. Each room has wall linear, and floor surface measurement sufficient for 36 men, but, owing to the deficient height of the walls, the cubage of air that each would have is only 1,215, 1,350, or 1,502, varying with the barrack occupied by him. The arrangement of the windows would not admit of the regulation allowance of 1,800 cubic feet being given to a man, unless he were to occupy the excessive amount of 15 linear feet, which a whole pier and a window measure, that is, the allowance of two men. The best way in which the deficiency can be supplied is by heightening the walls, and this will be necessary in

in order to give slope to the roof of the veranda which should be added to the upper floor.

11. There is a dormitory accommodation in the three barracks for only 108 rank and file. The number of unmarried men to be accommodated, in a field battery, is 132. There is thus a deficiency of room for 24 cots for the battery alone; this, however, is the headquarters of a brigade, and there are the bandmen and others that have to be provided for.

12. The accommodation for serjeants is so exceedingly bad that it cannot be occupied by them; it is on the ground-floor, where at each end of the building there are two serjeants' rooms, each with a floor 11 by 11 ft. and a height of 18 ft., with one doorway, 2 ft. 10 in. wide, without a door, open to what formerly was the lower barrack-room, a window towards the side veranda 4 ft. by 5 ft., and another 3 ft. by 5 ft. 8 in. towards the staircase in the end veranda. A convicted prisoner, in a solitary cell, has more space and better ventilation.

13. The serjeants sleep, at present, together in a screened-off portion of the lower barrack-room.

14. The men of the band sleep in a portion of the lower floor of the right division barrack; the number of occupants the night before the inspection was 15; the other half of the room is used for the harness, until the new harness-rooms, now in progress, are ready.

15. The lower floor of the centre barrack is occupied in part by the school for adults, which is attended by so many as 60 men, and partly by the serjeants' mess. The ground-floor of the left flank barrack is divided into a dormitory for serjeants, a coffee-room, and a library. The library and reading-room is much frequented, and, although half of the lower accommodation is given to it, there is complaint of its being too small. There are the usual indoor games provided, and numerous periodicals are on the table.

16. There are at present no dining or day-rooms. The men take their meals in the veranda on the lower floor.

17. The *Lavatories* are being altered; they are detached in rear of the barracks. There is a centre room, in which a stone bench for basins is being made at each side; it is very insufficiently lighted. At the end there is a very large cistern for water, which is not sufficiently elevated to supply baths by gravitation. On each side of the centre room there is a wing, in which there are two bath-rooms, and an urinary, which is to be converted into a room for private ablution, while detached urinaries, with bamboo-walls are to be provided. The bath-rooms are lighted with a glazed window on the east side, and each has a door; there is not as yet any bath or shower-bath provided. There is a cesspool in rear for the waste water, which has daily to be removed from it.

18. The *Plunge-bath* is on the right front, in a line with the staff serjeants' quarters; it is constructed above the level of the ground; its greatest depth is 5½ feet; it has steps at one end; the bath is 35 ft. 8 in. by 13 ft. 9 in., and on three sides it has a path, only 1½ feet wide, on which it would be impossible for two men to pass. The wall above this path is 8 ft. 9 in. high, and in it there are unglazed segmental openings. The roof is tiled, and has a small ridge-ventilator, which is unprotected against the admission of sparrows, and they are troublesome from building and scattering the material of their nests. At one end there are some foot-baths hollowed in blocks of stone. There is a stone bench, too high to be used conveniently as a seat. There are no pegs for hanging clothes or towels. There is no urinary. The waste water is drained to the watercourse on the south-west.

19. The bath room is supplied with brackish water from a well close by, and in which there is a rise and fall corresponding with the tide of the sea, and, when the tides are low, a sufficiency of water is not procurable. The last filling of the bath occupied seven days.

20. The men frequent the bath very much in the hot season, and it is said there is no need for bathing parades.

21. There are two *cook-houses* in rear of the barracks, built according to the old design, and very smoky. There is not a room for the cooks. The dresser and block were in use.

22. The *latrines* in rear of the barracks have been recently improved, and they now have wooden partitions and doors. The seats are according to the standard plan, excepting that the pans are not close enough to the underside of the seat plank, and the arch in rear of the seat has not yet been closed with a board.

23. In rear of the centre barrack there are, under construction, three harness rooms, and the outer two have workshops built against them, back to back, instead of end to end, so that the ventilation cannot but be most imperfect. There are gables facing the west and east, with small entrance doors and semicircular openings in the wall. The work is far advanced, but the defect may yet be in some measure remedied by increasing the size of the openings in the gables.

24. The *canteen* is a centre room in a building in front of the barracks, in a line with

the staff sergeants' quarters. It is 20 feet by 18 feet, and is not furnished. The floor is of concrete, and is much broken and very dusty. There are clerestory, but no roof, ventilators.

25. One end room is the liquor store, in the other the collar-makers have their workshop at present.

26. *Staff Sergeants' Quarters.*—In a building in front of the left barrack there are accommodated the brigade serjeant major and the schoolmaster. The building has a two-feet-high plinth, an earthen floor, and an open veranda eight feet wide. A partition divides the portions of the veranda that belong to two occupants. Each has two rooms, respectively 18 feet by 18 feet and 18 feet by 10 feet, and in height $17\frac{1}{2}$ feet. The ceiling is of cloth. There are clerestory windows. The rear corners of the veranda are enclosed to make bath-rooms and privies. There are separate cook-rooms. The accommodation is inferior in extent to what is allowed in the standard plan, and the ground floor dormitory, with its low plinth, is unhealthy. The serjeant major and one of his children were ill with fever at the time of the inspection.

27. Two *Battery Staff Sergeants* and the *brigade trumpet major* occupy a building in front of the right barrack. The building has two floors, and the lower has a very narrow, open veranda on the west; on the east and at the ends it is enclosed. The three quarters are separated by partitions in the veranda, and each consists of a lower room 16 feet by 16 feet and 12 feet high, and an upper room of the same surface measurement. There is neither veranda nor weather-shade to the windows of the upper rooms. The access to the upper floor is by stairs in the lower rooms, rising through the ceiling above. The upper rooms of the centre quarters have two windows in front and two in rear; the end rooms have in addition an end window; below, half glazed doors take the place of windows, and there are no other means of ventilation. Each family has a detached lavatory and cook-house. Water was lying in pools beside them.

28. The *quarter-guard* is far detached at the left rear of the barracks. It is a building on a two-feet-high plinth, with an open veranda, which, like the room within, has an earthen floor. The floor surface of the room is 23 feet by 18 feet, and the height of wall is $15\frac{1}{4}$ feet. Two sides have each two glazed windows, $3\frac{1}{2}$ feet by 5 feet clear of the frame, with their sills $3\frac{1}{2}$ feet from the ground; on a third side there are a door and a window; in the remaining side there are doors opening into detention-cells. The position of the windows and doors is not favourable to the proper placing of the cots; two piers are each $7\frac{1}{2}$ feet broad and a third is $4\frac{1}{2}$ feet. The corners have but small extent of wall, and they cannot be occupied on account of the doors of the detention rooms on one side, and on the other on account of windows limiting the available room. The guard is five in strength, and gives one sentry, leaving four to occupy the room. There is neither roof nor clerestory ventilation.

29. *Detention Cells.*—As before mentioned, they open into the guard-room. Each is 11 feet by 11 feet, and has a height of $15\frac{1}{4}$ feet. There are a plank and a barred door to each, and two large, barred, clerestory openings, and, close under them, smaller ventilators opening into the veranda. There are besides, two barred windows with low sills, and now closed with perforated metal plate. The present too free communication that there is between the prisoners and the guard is objected to by the commanding officer. The guardroom has a detached privy.

30. The *solitary cells* are two in number, under one roof. Their dimensions are 10 feet by 10 feet by 16 feet high. There are a plank and a barred door. There is a ridge ventilator, a barred window high in the wall, and level with the ground; on the east side, two large barred ventilators. The cells are two small, and the ventilation is faulty. They are rarely used, as convicted prisoners are confined in the garrison cells.

31. The *schoolroom* is in a building standing end to the wind, and which was originally divided into four rooms. By opening a large arch in the partition, the two middle rooms were made into one, which is now used as a schoolroom for children. The plinth is two feet high, the floors earthen. The doors are half glazed, and have over them glazed revolving frames. There are clerestory glazed ventilators; no roof ventilation. The end rooms are occupied as office and orderly room.

32. *Family Quarters.*—They are in one continuous block of 15, far in rear of the unmarried men's barracks. The number of quarters is under the established proportion. They face the W. S. W. They are built of sun-dried bricks and are tiled. They have a plinth about one foot high. In front and at the ends the seven-feet-wide veranda is enclosed with trellis. The eaves are 7 ft. 4 in. high. Each family has a front room, with floor surface 17 feet by 15 feet and with height $12\frac{1}{4}$ feet, and a back room $13\frac{3}{4}$ by $6\frac{1}{2}$ by 9 feet, intended to be used as a bedroom, but which cannot be so occupied. The rooms communicate by two high open archways, respectively 3 feet and 2 ft. 8 in. wide, one open to the floor level, the other with a sill about four feet high. In the west or front there is a door $6\frac{1}{2}$ ft. 2 in. by 2 ft. 8 in. clear of the frame, and a window 2 ft. 6 in. by 2 ft. 4 in. The back room has similar door and window. The only ventilator is an opening on the eastern slope of the roof, made by raising a portion of the roof.

33. Each family had standing in rear a building comprising a cook-room, a bathing-room, and

and formerly a privy, but lately a partition has been thrown down to enlarge the lavatory. There have been finished a common privy for men at some distance from one rear angle of the block of quarters, and one for women at a corresponding distance from the other rear angle, and the construction of one for children has been begun opposite the middle of the block. The distance that those at the further ends of the range of quarters will have to go to the privy is by far too great, especially in case of sickness. The providing a separate privy for children is very unusual, and is not judicious. It is advisable that the partition be restored, so that each family may again have its privy near at hand.

34. The tiled *stable sheds* have open sides, yet the want of roof ventilation is complained of by the commanding officer. In one of the sheds some very small holes have been pierced in the ridge, but they are altogether insufficient as outlets for the heated and vitiated air that collects in the pent of the roof.

35. The means of out-door amusement that have been provided for the men are a double fives-court, an American bowling-alley, a skittle-alley, and cricket-ground.

36. The *hospital*, with its subsidiary buildings, stands at the eastern part of the lines, and is enclosed in rear and at the sides with a low wall and railing. The building has the same aspect as the barracks. It is on a plinth two feet high, is of stone and lime-mortar, and is tiled. It has a double veranda, the eaves dipping to 8 ft. 8 in. The outer veranda is seven feet wide, and is open, the inner is 12 feet wide, and is enclosed. It has seven pannelled doors, seven feet high, with glazed frames, 1½ feet high, over them, and made to revolve on a horizontal axis. Above these there are clerestory glazed ventilators.

37. The ward is 79 feet by 24 feet, and is 24 feet high; it communicates with the inner veranda, in front and in rear, by seven archways, reaching upwards to 15 ft. 8 in. from the ground, and 4 ft. 2 in. wide. Two of these are continued downwards to the floor, the others only to within three feet of the floor. The sides of the arches are splayed inwards, and the piers between the splays are six feet broad, the arches at the splays 5 ft. 6 in. wide. The linear measurement of the wall in the corners is 3 ft. 7 in. These corners will allow a cot to stand in each, although with but scanty room, and a cot can be placed against each pier. Thus accommodation can be given to 16 cots, which is about the number that the field battery with the head quarters and band of the brigade requires.

38. The *Hospital Lavatory* is an enclosed portion of the rear outer veranda, badly lighted by a window whose sill is nine feet high. It has a stone bench, with moveable basins. It has not a foot-grating, but one, it is said, is being made. There is a scuttle-butt with the supply of water. There is a shower-bath, with a stone stair outside, to allow of its being filled, but it is never used. There is a slipper-bath. The floor of the lavatory was wet.

39. The *Hospital Cook-room* is after the old design, without chimney. The fire range is too extensive, but there is no boiler. There are large openings for light and air, but unglazed and unbarred. The cooks sleep in the cook-room to guard the utensils, as there was recently a robbery by entry through the unprotected openings. It was found at the inspection that the liquid refuse was thrown out on the ground instead of being carried away. The evil of this was pointed out.

40. *Hospital Latrine*.—This is 30 feet in rear of the hospital, and is connected to it by a covered passage, with a continuous roof. The building appears to have been both a lavatory and a privy; now, one-half of it is used for the latter purpose. The seats have recently been altered for the use of dry earth, but they are left without partitions and doors. The tops of the arches behind the seats have not yet been closed. There is a window behind the seats, or to eastward, which is barred, but it has neither glass nor shutter. The other openings are on the west side towards the hospital, and the easterly wind that blows at this season carries the effluvia into the ward. There is no ridge-ventilator.

41. The *Dead-room* is at the same distance in rear of the hospital as the privy, and, with it and the cook-room of the male hospital, and one intended for the female hospital, forms a line of building which must seriously obstruct the perfilation of the hospital. The dead-room floor has a very badly-laid pavement.

42. A foundation was seen to be marked out for a temporary uninary in a line with the buildings now mentioned, and tending to increase the obstruction. Another site, at the south-east corner of the hospital, was pointed out as more appropriate.

43. The veranda at the south of end of the male hospital is enclosed as a surgery and dispensary. That at the north end is enclosed, and cut off from the male hospital, and is used as a *Female Hospital*. The ward is 11 ft. 10 in. wide, and 38 feet long, and has doors and clerestory openings towards the north, and one towards the west. At the east end there is a closet, 9 ft. 10 in. by 9 ft. 10 in. that is said to be a parturition ward. Beyond it the outer veranda is enclosed as a bath-room and privy. The accommodation is altogether unfit for a female hospital.

44. To the north of the hospital, and between it and the married men's quarters, there is a large building of stone and lime-mortar, on a two-feet-high plinth, with an open veranda, nine feet wide, with earthen floor all around it. It is divided by a partition, reaching to

the tie-beam, into two rooms that are paved, one 45 feet by 22 feet, and in height 19 ft. 8 in. On each side there is one pannelled door, 7 feet by 3½ feet, and three windows, 3 feet by 4 feet. The arch-heads are built up. Over the doors and windows there are glazed clerestory ventilators; at the south end also there is a door. The piers between the side openings respectively are 6½ feet, 7 feet, and 7 feet broad. The wall in the corners is insufficient to allow of cots being placed in them. The other room is 37 feet by 22 feet, and has on each side one door and two windows; it is at present used as a ward for sick Native followers. It appears desirable that this building should be used for the female sick, instead of the very unfit veranda of the male hospital.

45. At the inspection there were several inmates in the native ward, and part of them were lying on the stone floor, without sufficient bedding to prevent their being injuriously chilled by their contact with such a floor. The medical officer said that no bedding was allowed for followers in hospital, and that often they had not sufficient of their own.

46. It is the intention of Government to benefit the followers by allowing them to be treated in hospital, and it cannot be that what is absolutely necessary for their welfare should be denied them on proper representation, and this was stated to the medical officer, who himself was anxious to provide better for those under his care. If the wants in this respect of the necessitous among the sick followers cannot be met, then it is very questionable whether it is advisable to remove them in cold weather from their huts, where they have their bed on the comparatively non-conducting earthen floor, to an hospital where they must lie on the stone floor, or an iron cot.

47. At the time of the inspection there were seven sick in the male hospital and none in the female ward. The sickness from 1st January to the 20th December, or nearly a year, has been 246 admissions: from fever, 43; dysentery and diarrhoea, 19; hepatic disease, 8; venereal, 21; and other causes, 155. There has been no death.

48. Drinking-water for the hospital and barracks is brought in casks from the commissariat well. It has been analysed, and found to contain a variable, but large, quantity of saline matter, chiefly alkaline salts, and very little organic matter. The water obtained from wells in the neighbourhood of the lines is not considered fit for man to drink, on account of the large amount of its saline contents; it is used, however, for ablution, and the horses of the battery are watered at a well beside the Rutton *tulao*.

RECOMMENDATIONS.

(a.) An additional barrack should be built to accommodate the 24 men of the battery at present unprovided for, and also the bandsmen and others of the head quarters of the brigade. The barrack should be according to the most recently approved plan.

(b.) The present barracks should be improved by raising the wall of the upper rooms to a height of 20 feet; adding 12 feet wide verandahs to the upper floors, and improving the staircases by widening and sheltering them; giving continuous ridge ventilators for the roofs, and plank-covered ceilings to the upper rooms, with sufficient ventilating apertures; providing clerestory ventilators with glazed frames, well protected from the weather by sufficient projection of the eaves; converting the existing windows into half-glazed doors, to open on the proposed verandas, and making all the glazed fan-lights to open and shut by revolving on a vertical axis. The floors should be well caulked.

(c.) Half of the lower floor of each of the existing barracks should be given as day accommodation for the men. This might be effected, when the serjeants and bandsmen have new dormitories, by removing the coffee and refreshment room and the library, which now is not large enough, to a new building which should be erected for them in a central position in rear of the barracks. One of the iron-frame temporary barracks, of which the material is believed to be in the arsenal, might be converted to this purpose.

(d.) The *lavatories* of the barracks should be assimilated as much as possible with the plan which has been already submitted to Government for approval, and should have raised cisterns to supply the hand basins and shower baths by gravitation. They should be lighted with glazed windows, and the waste water should be conveyed by pipe drain to a distance, to be utilized, or to be absorbed in the gravel in the bank of a water-course.

(e.) The *plunge-bath* cannot now, it is apprehended, have the path on its margin made wider. It should have glazed windows to protect the men from the direct draught of the cold easterly wind. The ridge ventilator should be defended against the ingress of birds by wire netting. Instead of the too high stone bench, there should be fixed substantial wooden benches, 18 inches high, for the men to sit on. There should be pegs on which to hang clothes and towels. And there should be an urinary, of the ordinary temporary construction, near the door, and with a covered and screened passage to it. A more certain and abundant supply of water should be provided for the bath.

(f.) The *cook-houses* of the barracks should be altered, according to the plan that has recently been submitted for the approval of Government.

(g.) The *latrines* of the barracks should have the seats completed, in accordance with the plan which has lately been issued for guidance.

(h.) The *Workshops*.—The evil attendant on the faulty position of the new workshops should

should be lessened by opening at each end, for perfilation by the breeze, an arch eight feet wide and nine or ten feet high, and forming the existing half circle into a circular opening high in the gable, and defending it from indrift of rain. The large eight-foot-wide door will require to be protected by a porch.

(i.) The *canteen* should have its floor paved. There should be continuous ridge-ventilation.

(j.) An upper floor, with a veranda, should be raised on the brigade staff serjeants' quarters, to afford them the additional accommodation they should have, and also more wholesome dormitories. If, by extension of the building, the brigade trumpet major could have appropriate quarters, this should be done.

(k.) The battery staff serjeants should have their accommodation improved by increasing the width of the veranda, adding a veranda to the upper floor for protection of the walls and windows from the sun-heat, and by removing the stair from the inside of the room to the eastern proposed veranda.

(l.) The faulty position of the windows of the guard-room cannot be altered, but two corners may be made available for cots by building up the doorways of the detention-cells that now open into the guard-room, and making doors for them in the veranda.

(m.) If *solitary cells* are required, they should be rebuilt according to the standard plan.

(n.) The ventilation of the schoolroom and the adjoining offices should be improved by a continuous ridge-ventilator. If the room in the west end of the building could be spared, a wide archway should be made between it and the schoolroom, to admit the western breeze.

(o.) The present mud-built married men's barracks, which are almost plinthless and very hot, should give place to new quarters, according to the most recent plan, and on plinths at least three feet high. They should be built in blocks of moderate length, and their number should be increased to what is allowed by regulation.

(p.) The privy should be restored to each family, by replacing the partition which has been removed. The building of the separate privy for children should be discontinued.

(q.) For the sake of the health of the men employed at stables, the roofs of the stable-sheds should have continuous ridge-ventilators. For the sake of those in barracks the sick horses' stable should be removed from its present close proximity, to a distance.

(r.) It is very desirable that the hospital should have an upper-floor dormitory. This would allow of the provision of the day-room accommodation that is now deficient.

(s.) The *lavatory* of the hospital should be removed from the veranda. A detached building at its right rear, which was intended to be a cookhouse for the female ward, might be converted into a lavatory for the male hospital, and be connected with it by a covered passage. Or the former lavatory, which is under the same roof as the privy, might be improved according to the most recent plan, and have its ventilation rendered complete, and totally distinct from that of the privy.

(t.) The *cook-room* of the hospital should be improved, by having its fire-range placed at one end and provided with a chimney. There should be a fixed boiler, with a cock for hot water. The present fire-range and sink should be removed; a pail should be used for refuse liquids. A room should be partitioned off at one end for the cook, who is required to be always present. There should be a glass window to give light, and, if necessary, to exclude the dust. The present openings in the walls and over the doors should be barred.

(u.) The *latrine* of the hospital should have partitions to the seats and doors, and the seats should otherwise be completed, according to the details in the plan lately circulated for guidance. The roof should have a continuous ridge-ventilator. There should be a glazed window at the end, and the present window, on the east side, should be provided with a glazed casement. The openings in the wall towards the hospital should be closed; the doorway should have a spring-hinged self-shutting door. There should be a break in the now continuous roof of the covered passage from the privy to the hospital.

(v.) The *dead-room*, which is offensively near to the hospital, and is also, from its position, obstructive of ventilation, should be rebuilt much farther to the rear, and according to the plan lately submitted for approval.

(w.) A better site at the S. E. corner of the hospital for the proposed temporary urinary was pointed out to the executive engineer, and it should be adopted.

(x.) The *female hospital* should be accommodated in the building now in part used for Native sick. A common ward and a parturition ward should be partitioned off in it. There should be continuous ridge-ventilation. The windows should be converted into half-glazed doors. The masonry in the arch-heads should be replaced with moveable glazed frames, made to revolve on vertical axis. The detached building in rear, intended to be a cook-house for the Native sick, but not used, should be converted into a lavatory and privy, and connected by a covered passage with the hospital.

(y.) It is most desirable that a plentiful supply of good water should be available for all, and that there should be filters with drinking cisterns defending the water from dust, and delivering by cock, as was recommended for the barracks in Poona in 1864.

(z.) Surface drains should be made to carry off the rain-water from the rear of the

barracks, where it is said to lodge, also from the enclosure at the south end of the hospital. The latter spot being hollow, should be raised by the addition of earth. The depressions between the staff sergeants' quarters and the barracks should be filled in with hard material.

The tent Lascars' lines and their latrine should be removed from their present position, on the west or windward side of the barracks, to a position north of the arsenal.

THE NAPIER OR EUROPEAN INFANTRY BARRACKS.

The European infantry lines are at the south and south-east of the cantonment, on gravelly ground, that has a gentle slope south-eastward to a small channel that carries off the storm waters, and that thence rises eastward to the married men's barracks and the hospital, which stands on more elevated and rocky ground.

2. There are 10 *barracks*, built with an aspect about W. S. W. in two rows, six in the front and four in the rear row, with intervals of about 120 feet between barrack and barrack. They are very substantially constructed of stone and lime-mortar, on plinths originally two feet high, but now at some parts less, apparently from the accumulation of drifted sand. They are paved, and the pent roofs have a single layer of tiles over a layer of clay and chopped straw. There are no ceilings. There is, on both sides, an open veranda 11 feet wide, with the eaves of its roof $8\frac{1}{2}$ feet high above the floor.

3. The men's room, being 279 feet by 24 feet, has a floor surface of 6,696 feet, and, with walls $20\frac{1}{2}$ feet high, has 137,268 feet of space. There are on each side 25 doors 4 feet wide, or 3 ft. 8 in. clear of the frame, and 8 ft. 2 in. high, and 24 piers $7\frac{1}{2}$ feet broad, or seven feet exclusive of splay, and at each end a corner with $4\frac{1}{2}$ feet of wall.

4. The doors have two pannelled shutters; in the upper part of each there is a pane of glass. Over the door there is a glazed rectangular revolving frame, 1 ft. 8 in. by 3 ft. 8 in. in the clear. There are also clerestory and interrupted ridge-ventilators, which are not sufficiently defended from the indrifting of rain. The doors were lately divided horizontally, to allow of greater and more satisfactory command over the ventilation, and the expedient has been beneficial.

5. At each end of the men's room there are two *serjeants' rooms*, separated by a narrow passage leading from the end door of the barrack room. They include the portions of veranda opposite them, and are each 20 feet by 12 feet, with the long axis directed across the building; they are 18 feet high. Beyond these rooms, at each end, there is an open veranda about 10 feet wide. The serjeants' accommodation is deficient in amount, and the more easterly room is cut off, in a great measure, from the breeze.

6. The linear measurement and floor surface are enough for 74 men in a room, or 37 on each side, and that number would have fully the regulated cubage. However, with only 24 piers, having a breadth of only seven feet each, and two corners, no more than 26 cots can be placed on a side, without being either too near each other or encroaching on the doorways. At the time of the inspection, part of the accommodation had been given up to a detachment of a relieving regiment that had arrived, and the remainder was temporarily over-crowded by the men who were on the eve of departure.

7. Calculating according to floor surface, the 10 barracks would hold 740 rank and file, but if every cot were to be placed in strict accordance with rule, the barracks would hold only 520 men, who, would have fully the hospital, instead of merely the barrack, allowance of floor and space.

8. There are no dining or day rooms, and the men take their meals in the open verandas.

9. There are detached *lavatories* in rear; they are not yet completed; they are insufficient in accommodation and in lighting.

There are no seats in the bath rooms.

No drainage has been provided, and the waste water lay in pools beside the buildings.

10. The *plunge-bath* is near the rear row of barracks; it is above the surface level; it is enclosed, and has glazed windows. There is a small ridge ventilator. There is a ledge, three feet wide, along its sides. The depth at the foot of the steps and for a quarter of its length is $4\frac{1}{2}$ feet, at the middle it is $6\frac{1}{2}$ feet, and at its farthest end $7\frac{1}{2}$ feet. The bath is usually emptied after being a week in use, and it takes a week to re-fill it from a neighbouring well. The water is discharged at some distance, by an open masonry conduit, into the watercourse that has been mentioned. There are no benches, pegs for clothes, or urinary for the bathers.

11. There is a *cook-house* for each company. Its dimensions are 20 feet by 12 feet by $11\frac{1}{2}$ feet. There is an open veranda, with its eaves only $6\frac{1}{2}$ feet high. There are a roof ventilator, and doors on one side, and windows on other two sides. The fire range is out of repair. There is no chimney, and the room is very smokey, and its walls are blackened. The raised sinks have not been given, and cess-pits for liquid refuse are still in use; these are emptied daily, and tank carts are used in carrying away the waste liquid to the

the filth pit. The carts and bullocks are the property of the regiment. A pair of bullocks makes six or seven trips in a day to the manure yard, two miles distant; the tank, which is four feet by three feet by $1\frac{1}{2}$ feet, holding during the outward part of the trip about 112 gallons.

12. The *latrines* were being altered in conformity with the plan recommended by this commission. Some points in the detail were explained to the executive engineer, who was present.

13. The original *canteen* building is given for other purposes, and a smaller building is used as a canteen. The room is small, but, it is said, sufficient in size for those who frequent it. Refreshments, consisting of corned beef, stew, fish, and coffee, are sold in the evening. The *canteen serndat's quarters*, at one end of the building, consist of one room, $15\frac{1}{2}$ feet by $9\frac{1}{2}$ feet, another 14 feet by 10 feet, with a height of $8\frac{1}{2}$ feet; they are close to the liquor store.

14. In another small building, at some distance from the canteen, there is a *shop* and *coffee-room*, where the men take coffee in the morning, while standing.

15. At the right rear of the barracks there is a *recreation-room*, which has been made of the iron frame of one of the temporary barracks. It is 195 feet by $40\frac{1}{2}$ feet, and its height is $12\frac{1}{2}$ feet. The plinth is two feet high, the walls are of wattle and mud, and are not protected by a veranda from the weather. The roof has very little pitch, and is covered with clay without tiling. There are interrupted ridge ventilators insufficiently protected from the rain, and a continuous ventilating opening under the eaves on the west side. There are half-glazed doors and glazed windows. It is divided into *library* and indoor-games' rooms, and refreshment room. There are a double fives' court, two bowling alleys, and a skittle alley. There is a regimental cricket ground, and almost every company has its own cricket ground and club.

16. There is a temporary block of *workshops* at the right flank of the barracks, and in the former canteen building the printers and bookbinders have their shops; and under the roof of the same building are the orderly and court-martial room, the quartermaster's office, and the quartermaster serjeant's quarters.

17. The *serjeants' mess* and *orderly-room* were formerly under one roof, now the orderly-room is the regimental tailors' workshop. The serjeants' mess has its side doors, like those of the barracks, pannelled, and with a pane of glass near the top. The south veranda is added to the room by a large archway, and at each end of that veranda there is a small room. The mess cookhouse is without chimney, and is smoky.

11. *Schoolrooms*.—In one building there are the adults' and the children's schoolrooms and a room in which the clergyman has meetings. The door are like those of the barracks; there are tubular ridge ventilators. At the end there are the teachers' quarters. The schoolmaster has a sitting room, and two bedrooms, with the partition between them running north and south, and without door or other opening to allow of perfation. The schoolmistress has two small rooms.

19. The *staff serjeants' quarters* are in one building, with a plinth two feet high, and divided into two rooms 14 feet by 14 feet and 14 feet high, one occupied by the serjeant major, the other intended for the quartermaster serjeant. There is a veranda $9\frac{1}{2}$ feet wide, and of which portions are enclosed to form rooms that have their outer wall nine feet high. The general height of the eaves of the roof is seven feet. There is a double set of out-offices under one roof, excepting the two privies that are made into one.

20. The *quarterguard* room has a plinth three feet high, but its veranda plinth is but two feet high. The room is 66 feet by 24 feet, and thus has a floor surface of 1,584 feet, and, the height being 20 feet, the cubage is 31,680 feet. There are six doorways on each side eight feet by $3\frac{1}{2}$ feet clear of the frame; the doors are pannelled, and at their upper part they have, like those of the barracks, a pane of glass. Over the doors there are barred frames. Besides the pannelled, there are likewise iron barred doors, to prevent, it was suggested, the prisoners kept in the guard-room from breaking out. The clerestory openings are venetianed. There is a small ridge-ventilator. On each side of the room there are five piers seven feet broad, and two corners with $3\frac{1}{2}$ feet breadth of wall. The guard is three non-commissioned and 12 rank and file, giving four sentries. There is no serjeants' room, and there is no convenience for putting aside the bedding of the men on sentry; 15 cots stand in the guard-room. The floor surface and space are fully sufficient for the guard, and, although the corners are rather small for the cots placed in them, they, with the piers, which afford ample room, give places for 14 cots. The cots of the sentries might advantageously be dispensed with, were there shelves in the veranda on which to place the bedding.

21. There is no *detention-room* excepting two cells that open into one end of the guard-room. Each cell is 10 ft. 9 in. by 11 ft. 9 in., giving about 130 feet of floor surface, and, the height being 20 feet, the dimensions agree with those that are required for cells on the plains. The floor is paved. There is no fixed sleeping bench, merely the trestle with moveable planks. There are two barred windows, five feet by $3\frac{1}{2}$ feet, towards the veranda, with pannelled shutters, and with sills only $2\frac{1}{2}$ feet from the floor, also 12 clerestory openings. One cell was found to be in use as a urinary. The night before the inspection,

from want of a defaulters'-room, eight prisoners, it was said, slept in the guard-room with the guard, the entire number at the time being, exclusive of sentries, 19. At the other end of the building there is a store-room. There is neither lavatory nor privy for the guard.

22. The *solitary cells* are at a considerable distance in rear of the barracks, and north of the family quarters. They are in an enclosure, and form three blocks of four cells each. The veranda plinth is only one foot high; the floor of the cell is a foot higher. The cell is $9\frac{3}{4}$ feet by $9\frac{3}{4}$ feet and $10\frac{1}{2}$ feet high, as measured to a partial wooden ceiling, but, were that partial wooden ceiling removed, the wall would be found to be $16\frac{1}{2}$ feet high. There are an inner pannelled, and an outer barred, door in front, a window in rear, $2\frac{1}{2}$ feet from the floor, with fixed bars, and inside a plank shutter. There are two ventilating openings on the floor level, and clerestory opening; the veranda is six feet wide. There is no fixed sleeping bench. The reconstruction of the guard-room is being planned.

23. There are four blocks of *married men's quarters*. One block of 14 quarters stands on low ground, and has a plinth only one foot high. There are an open common front veranda seven feet wide, and a rear veranda $11\frac{1}{2}$ feet wide, portions of which are enclosed as ablution rooms. Each family has a front room $16\frac{1}{2}$ feet by 13 feet by 15 feet, with a front door 8 ft. 4 in. by 3 ft 8 in., clear of the frame, and a window 4 feet by $2\frac{1}{4}$ feet; and a back room $12\frac{1}{2}$ feet by 13 feet by 15 feet, with a back door $6\frac{1}{2}$ feet by $3\frac{1}{4}$ feet. All the arch heads are built up. The partition between the front and rear rooms is only partial, being eight or nine feet high, and this arrangement is highly beneficial, as it allows of a freer current of air than it otherwise would have, reaching the back room. There is a door in the partition too close to give privacy.

24. The other blocks stand on a low rocky acclivity, and two of them contain 20 quarters each, and the fourth so many as 26. In rear of the quarters and at right angles to them there are the out-offices, consisting of a cook-room, lavatory, and a privy, for each family, built in pairs. It had been ordered to do away with the privy for each family, and to erect a common one for males at one end of the range of quarters and another for females at the other end, because it was understood that the use of dry earth would require such constant attention of the sweepers as could not be given by the present establishment or with any reasonable increase of it. No such increase of work being really involved in the new system, the executive engineer was requested to keep the execution of the plan in abeyance for the present, as the inconvenience to families with children that would attend the having to go from one end to the other of a range of 20 or 26 quarters, would be very great. There is no drainage for the lavatories, and the rocky ground between the quarters and their out-houses is very uneven.

25. The *hospital* is on a low rocky ridge, a short distance south of the married men's quarters. The aspect of the building is nearly the same as that of the barracks. It is on a plinth, which in front is about $3\frac{1}{2}$ feet high, but in rear is but little raised above the ground, and it is substantially constructed of stone and lime-mortar. The male hospital consists of three ground-floor wards and an upper ward over the middle of them.

26. The two flank wards, being each 88 feet by 24 feet, have a floor surface of 2,112 feet, and, the height being 18 feet, the cubage is 38,016 feet. There are on each side of the ward seven piers seven feet broad, and corners measuring 2 ft. 8 in. to 3 ft. 10 in. There are eight doors eight feet by $3\frac{1}{2}$ feet in the clear, and revolving glazed frames 1 ft. 8 in. by 3 ft. 7 in. over the doors. The front and rear verandas, opposite these wards, are 11 feet wide; they have tiled floors, in bad repair. The centre ward resembles the others, but is a little longer, its length being 96 feet, and it has nine doors on a side. Its rear veranda is enclosed, and is only 9 ft. 9 in. wide.

27. The upper ward is approached by an inconvenient stair in the rear veranda of the centre ward. It is 96 feet by 23 ft. 9 in., or has a floor surface of 2,280 feet and a space of 30,780 feet, the wall being $13\frac{1}{2}$ feet high. There is an enclosed back veranda $10\frac{1}{2}$ feet wide, and no front veranda. There are eight windows $3\frac{1}{2}$ feet by $2\frac{3}{4}$ feet, with sills $2\frac{1}{2}$ feet high, and nine doors 8 ft. 4 in. by 3 ft. 7 in., partly glazed, venetianed, and pannelled. The lavatory of this ward is a small room at the end of its veranda, ill-arranged and imperfectly furnished. In a corner of the veranda there was a common, old pattern, iron urinal on a wooden trestle, with a heap of sand on the floor under it. The medical officer was advised to apply for glazed stoneware chamber pots, in substitution of this offensive arrangement.

28. Each of the flank wards holds 16 cots, with due allowance of space and regard to their position with respect to doorways. The middle ward on the ground floors holds 18 cots. The upper ward is ill-proportioned, and, although its area would admit of 19 beds, its cubage allows of only 12 at the regulated rate of space. Even if the larger number be taken, the total accommodation in the four wards is only 69 instead of 92, or there is a deficiency equal to 23 beds.

29. At each end the building is terminated, as in the barracks, with two rooms that include portions of the verandas. At the right of the hospital, and in a line with its rear veranda, there is a detached dispensary.

30. The *hospital cook-house* is without a chimney, and is smokey.

31. There

31. There is a *lavatory* at each end of the rear veranda on the ground floor, of dimensions 9 ft. 9 in. by 11 ft. 9 in.; it is furnished with a table with moveable basins, a scuttle-butt with water, a floor grating much too high, and a shower bath that is never used. There is no screened bathing-place. The waste lavatory water is received in cesspits, which are daily emptied by hand.

32. The *latrine hospital* is of the old, very faulty design; its reconstruction has been ordered.

33. The *dead-house* is too small, is very imperfectly paved, and is overlooked from the latrine, to which it is very near.

34. There is no *isolation ward* for those suffering under contagious disease. There are two cells in the hospital courtyard, similar to the regimental solitary cells, intended, it was said, for prisoners requiring medical treatment.

35. The *hospital guard-room* is on a plinth two feet high. The room is 17 ft. 9 in. by 17 ft. 9 in. by 13½ feet, with a veranda 6¾ feet high. There is no roof ventilation.

36. The *female hospital* is in line with the male hospital, and in an adjoining enclosure. From the ground sloping, the plinth, although three feet in front, is but little above the ground in rear. There is an open veranda, 10 feet wide in front and in rear; the veranda eaves are only 7 ft. 4 in. high. There are two wards 23 ft. 9 in. wide and 18 feet high. The length of one is 40 feet, and it has four doors on each side. The length of the other is 20 feet, and it has two doors on a side. There are interrupted ridge ventilators. At each end there are two rooms, arranged like those of the barracks, with a passage between them; the front room at one end is the matron's quarters, and the front room at the other end is for the assistant matron. The rear room, at each end, is partitioned into a lavatory and a store-room. There is a detached privy 50 feet in rear, with a covered passage, and behind it there is a dead-house. There is also a cook-house that is never used, as all cooking is done in the male hospital cook-house.

37. There had been since the rains *much sickness* among the men in the form of *malarious fever*, even more than was shown in the returns, as many for slight attacks were treated by the surgeon, without being admitted into hospital.

38. The *drinking water* for the regiment is drawn from one of the commissariat wells, and is conveyed by pipes, laid under ground, to an open reservoir, surrounded with a dwarf wall and covered, at some height, with a tiled roof. It is said the reservoir is cleaned out at least once a month. The reservoir is open to receive dust or whatever may be carried to it by the wind, and the water carriers were seen standing on the parapet while drawing water with their buckets, and spilt water was seen flowing back into it over their dirty feet. Analyses of samples of the water drawn at different times have given different results, but all have shown so large an amount of saline matter as to make it very desirable that water from a better source should be obtained. The present mode of drawing the water from the reservoir might be changed for a better.

39. The *officers' lines* are bungalows in enclosures, intended to be gardens, on the west of the barracks, and the line of separation between what is under civil and what is under military jurisdiction lies along the western side of the most westerly row of officers' houses.

40. Owing to the frequent representations of the medical officer of the regiment in his sanitary reports, which had been brought by this Commission to the particular notice of the military authorities, the lines of the officers were closely inspected, and their condition was found to be very unclean, and fully to justify the medical officer in what he had written about them. The filthy condition of the servants' privies especially demanded immediate attention. The local military authority, when personally spoken with on the subject, stated that he had not legally the power to remedy the evil, the houses being the property of civilians who let them to the military officers.

RECOMMENDATIONS.

(a.) The rule, that upper floors only should be used as dormitories in all parts of India, should not be neglected at Kurachee, where present experience shows the prevalence of febrile malaria, and its greater effect among the men occupying the ground floor Napier barracks, than among the artillery men who have upper floor dormitories. The walls of the present barracks are sufficiently strong to bear upper stories, which might be added if the present faulty distribution of doors and piers will admit of conversion, so as to give piers 10 feet broad and doorways five feet wide.

In the reconstruction, the now deficient accommodation for serjeants should be replaced with what is approved. Dining and day-rooms also should be provided for the men. If entire reconstruction be found necessary, then the buildings should be removed farther from the Sudur Bazaar.

(b.) For immediate comfort and well-being the ridge ventilators should be thoroughly secured against the inbeating of rain, by a much greater overlap, than there at present is, of their eaves; three or four feet would not be too much, even if the gap were no more

than eight inches. If the gap were much wider, a course of planking might be laid across the lower part of the struts supporting the raised portion of the roof. The ridge ventilator should be made continuous. The clerestory openings should be protected with bonnets. The upper panels of all the doors should be replaced with glass.

The suggestions for the improvement of the ridge ventilators are applicable to those of all the buildings in the lines, which have such ventilators, and should be followed.

(c.) The lavatories and bath-rooms, now in progress of improvement, should be completed in close accordance with the plan which has recently been submitted by this Commission to Government. The foot gratings should be of moderate thickness.

Immediate measures should be taken to drain, not only those of the unmarried men's barracks, but also those of the hospital, the married men, and of all others, to an outfall prepared in the bank of the watercourse near where the waste water of the plunge bath is now discharged, or a little south of that spot. A pit to be filled with rubble should be dug for the purpose, in the bank of the watercourse and covered over; the water discharged by pipe into it would percolate into the bed of the watercourse or its subsoil, which would be cleansed by the freshets after rain. Piping used for this purpose should have perforated metal strainers at its inlet and outlet orifices, to prevent rats or other animals lodging in it.

(d.) Addition should be made to the supply of water to the existing plunge bath, and to the means of re-filling it. Fixed benches and pegs for clothes should be given, and a urinary of a temporary sort should be constructed close to the bath, and communicating with it by a doorway, to be opened near the north-east corner, and a screened passage. Another plunge bath should be provided for the left wing of the regiment.

(e.) The cook-houses of the barracks should be altered in conformity with the plan which has been laid by this Commission before Government. The cesspits should be removed, and chimneys should be given, not only in the case of barrack cook-houses, but in that of every such building.

(f.) The modification of barrack and all other latrines should be carried out in strict accordance with the drawings circulated by Government at the request of this Commission.

(g.) A gymnasium and another double fives court are required to complete the means of recreation allowed for the men of the regiment, and one side of the existing fives court has yet to be adapted for racket playing. The recreation-room, of temporary construction, should have a narrow veranda to protect its walls, and its ventilation should have protection from the rain.

(h.) The serjeants' mess should have connected with it a library and recreation-room. The doors of the mess-room should have their upper halves glazed.

(i.) In the school building also the doors should have their upper halves glazed. The dead wall between the two bedrooms of the schoolmaster should have a large door for communication and for ventilation, and over the door there should be a frame of fixed venetians.

(j.) The staff serjeants' quarters should be rebuilt after the standard plan. The privies of the two families should be separated.

(k.) In the quarter-guard, pavement should be substituted for earthen flooring; the doors should be half-glazed. A detention-room, according to the standard plan, should be added. The cells should not open into the guard-room. A shelf should be provided in the veranda for the sentries' bedding, to gain more room for the guard by removing the unoccupied cots. A lavatory, privy, and a temporary urinary should be provided for the guard. The cell should not be allowed any longer to be used as a urinary. The improvement of the ridge ventilators of all buildings has been recommended under (b).

(l.) The solitary cells are too small, having a floor surface of only 95 instead of the regulated 130 feet, and a cubage of 998 instead of 2,600 feet. The full amount of room should be given to the prisoners; this might be found by converting the four cells of each block into three, and by raising the walls to 20 feet. The barred window should be placed high in the wall, beyond the prisoner's reach. His sleeping bench should be of massive timber firmly built into the masonry.

(m.) In the married men's quarters the arch heads of the front and back doors and windows should have glazed frames, to be opened and shut by revolving on vertical axis. The ground between the quarters and the out-houses should be made even. The lavatories should be drained by pipe to the bank of the watercourse, as above recommended. Each family should be allowed to retain its privy, and where the partitions of adjoining privies have been removed they should be replaced.

(n.) The deficient accommodation of the hospital should be supplied, and a new upper floor should be raised over all the hospital. The present doors should be half glazed. The lavatories and cook-room should be improved according to the standard plans.

(o.) A new dead-house should be built at a greater distance in rear than that at which the present one stands. It should be after the plan which this Commission has submitted for the approval of Government.

(p.) Isolation

(p.) Isolation wards, for the treatment of those suffering from contagious disease, should be built.

(q.) The guard-room of the hospital should be improved according to the standard plan, lately circulated by the Government of India.

(r.) It is very desirable that better water should be found for the troops, and that whatever water is supplied for drinking and culinary purposes should be preserved from defilement in its distribution. Eventually, and with as little delay as possible, every barrack and every cook-room and the hospital should have delivery of water by pipe and tap. In the meanwhile the reservoir should be boarded over, and water should be drawn from it by pump instead of by dipping.

(s.) The condition of the officers' lines should be thoroughly improved, with the authority that may be found to be already in existence, and any imperfection in the law should be remedied.

FITZCLARENCE, OR DEPÔT BARRACKS.

THESE barracks are between the Napier barracks and the Native Infantry lines, and nearly all have the same, W.S.W., aspect that the other barracks at this station have. They are nine in number, standing in two rows, four in front and six in rear, and the two right end barracks of the rear row are placed so as to form angles with the common line of the others. There is an interval of 180 feet between the rows, and, between the front line and the row of married men's quarters in front of it, there is a distance of 200 feet.

2. The barracks are on low plinths, and constructed with a frame, having two rows of wooden posts 14 feet apart, and side walls of sun-dried brick, seven feet outside the posts, giving a total width of 30 feet to the room. Beyond the walls there is an open narrow veranda. The floors are earthen and uneven. The buildings are gabled, and have a pent roof with interrupted ridge ventilators, imperfectly protected from the rain. The side openings of the rooms are partly doors and partly windows. The piers are alternately 16 and six feet, and in the broader, or every second, pier there is a circular opening four feet from the floor, with a glazed frame, a foot and a half in diameter, revolving on a horizontal axis. The other windows have glazed casements, and upper portions that open horizontally.

3. At each end, projecting beyond the gable, there are, towards the front, two serjeants' rooms, 11 feet high, and ventilated by venetianed clerestory openings over the narrow veranda. Towards the rear, and separated from the serjeants' room by a narrow passage that communicates with the end door of the men's room, there is a paved room, latterly used as a lavatory but which formerly was a urinary. There is no dining or day room for the men.

4. In front of the married men's quarters, and between them and the officers' lines, which are farthest to the west or windward, there are three flat-roofed buildings in line, on plinths about two feet high. In these there are the guard-room and two adjoining cells, the rear one cut off from the breeze; a canteen which has no liquor-store and no bar; a serjeants' mess-room, an orderly-room, and two school-rooms which are temporarily and partially partitioned, with reed matting, for the accommodation of families, because some of the family quarters are still in the hands of workmen. The rooms have earthen floors, plank doors, and great extent of dead wall. There are venetianed clerestory windows, and there are small wind towers to catch the south-westerly breeze.

5. In rear of one of these buildings there is a small room, formerly a cook-house, that is now converted into a court-martial room.

6. In rear, or north-east of the barracks, there are the *cook-houses* of the men. They have lately been paved; they are of the old plan and have no chimneys. Raised sinks, it is said, are to be given, and the cesspits are to be disused.

7. There are three latrines, of 16 seats each, for the men, they are of sun-dried brick, and are being enlarged with stone masonry, and are in progress of assimilation to the standard plan. At the rear flanks there are two latrines, for females, that are now closed.

8. The *family quarters* are in six blocks placed in line, at intervals of about 70 feet; they are on very low plinths, have walls but 10½ feet high, and roof with little pitch, and ridge ventilators with little or no overlap to prevent the indrifting of rain. These roofs have recently been repaired or renewed; formerly there were small wind towers for ventilation. Each block had 15 quarters of very limited dimensions; now two quarters are made into one, so that in each range there are eight double quarters and one single. This is a great improvement, but still the accommodation is bad. The out-offices are in rear, in double sets, at right angles to the general line, and each family had its own cook-room, bath-room, and privy; now those privies are suppressed, and a common one is being built for women, detached from, and in advance of, the block, at its windward corner, and another for men in the gap between the neighbouring ranges of quarters.

9. *Staff Serjeants' Quarters*.—The serjeant major's bungalow stands in the middle of the line of family quarters. It is a tiled house, of sun-dried bricks, on a two feet plinth, and with a veranda $6\frac{1}{2}$ feet wide. It contains two rooms 14 feet by 14 feet and 14 feet by 12 feet respectively, and 11 feet high; they are not ventilated. It has out-houses of sun-dried brick in bad repair. There are now being built, opposite and near to its front corners, the privies of the women of the family quarters, and, opposite its rear corners, the privies of the men. These cannot but prove a grievous inconvenience to the staff serjeants.

10. The sun-dried, brick-built female hospital has been appropriated as quarters for the apothecary. The *male hospital* is constructed of stone and clay mortar, and is in two gabled buildings that stand in line, and a third in rear of them, on sloping ground, with a plinth that in front is $3\frac{1}{2}$ feet high, but behind is even with the ground. The roof trusses are supported on rows of posts which are 14 feet apart, and, as in the barracks, a wall is built about seven feet outside the row posts. Each of the wards in the two front buildings is 30 feet wide and 89 feet long, and thus has a surface of 2,670 feet which would suffice for 22 inmates, but in reckoning the running measurement there is scarcely enough for nine on a side, or 18 in the ward, but as the wall is only $9\frac{1}{4}$ feet high there is cubage of air for only 10 sick persons. In the front buildings there are on each side eight windows and a central door. The window in clear is $4\frac{1}{2}$ feet by 3 feet, and has a glazed casement with an upper part opening horizontally. The piers are from six feet to 6 ft. 4 in. At the north end there are two small rooms, and the open veranda extends round the south end. The lavatory is a shed with mat walls. There is a privy, with a covered passage, at the south corner; it is of old, faulty, plan, and is to be altered. There is a cook-room in rear between the wards.

11. The rear building is like the others in construction, but its accommodation is differently arranged. It has four middle rooms, one of them being used as a dispensary, and the other three as small special wards. The partitions are but partial. At the ends there are larger wards 69 feet by 30 feet and $9\frac{1}{4}$ feet high. This also has its out-offices of temporary construction in rear, a dead-house similar to that of the Napier barracks, and sheds for the second-class hospital servants. These sheds had their sides closed, in a most untidy manner, with dirty old tattered matting.

RECOMMENDATIONS.

(a.) The barracks have before been reported to be unfit for the permanent occupation of European troops. They afford better shelter from heat and rain than that of tents, but, even as rest-houses they ought, if capable of it, to be improved. It is feared that giving them good floors on well raised plinths would be impracticable, but increasing the side openings to allow freer perfilation may be so. It is desirable that, where there are now the small circular windows, doorways should be made.

(b.) The ridge ventilator should be immediately improved by giving it sufficient overlap, as already recommended in other instances in this report. The ventilator should be continuous.

(c.) The lavatory room at the end of the barrack should be properly ventilated and added to the serjeants' accommodation, a detached lavatory being provided for the men.

(d.) The cook-houses should be improved in accordance with the standard plan recommended by this Commission.

(e.) The latrines of barracks, hospital, and all other subsidiary quarters should be improved in conformity with the standard plan. The latrines of the family quarters should be placed to leeward instead of to windward.

(f.) As the staff serjeants are not mere travellers, but are permanently stationed with the dépôt, their quarters should in all respects be equal to what is allowed by recent order. The very objectionable vicinage of the serjeants major's bungalow has been mentioned.

(g.) The construction of the hospital would not admit of much alteration. The walls, however, should be raised to the usual height, clerestory ventilators, duly protected from the weather, should be added, and the ridge ventilators should be improved.

(h.) The condition of the second-class servants' huts should be at once improved. It is objectionable that such filthy habitations should exist in any cantonment, and particularly so that they should be allowed in hospital premises.

NATIVE INFANTRY LINES.

THE lines of the Native Infantry regiment are at the north-east of the cantonment, and between the Fitzclarence barracks and the soldiers' bazaar, which is under civil control. The ground is in some parts intersected with dry watercourses. There is a deep trench cut round the lines of *pendal*, to intercept and carry off the storm-waters.

2. The

2. The *pendals* have nearly flat roofs, covered with clay. They are wide, and, when occupied, have a middle central partition, and at every nine feet transverse partitions, none of these being more than $5\frac{1}{2}$ feet high; all have benefit from the raised roof ventilators. Each room has a low arched doorway in the outer wall, which is of sun-dried brick, and is protected by a veranda that is generally enclosed by a wall, which is not, however, allowed to reach the eaves.

3. When it rains the room under the ventilators are uninhabitable on account of the water that falls on the floors. The use of cesspits, that once was common, has been entirely discontinued. There is still the inability to dispose satisfactorily of the bathing water, which exists in all Native regiments.

4. The latrines are about a furlong to the northward of the nearest *pendal*, and fully a quarter of a mile from the most southern, a distance too great for the families to go, especially during sickness. The latrines are most offensive. There is a sloping pavement under the seats, from which what is liquid flows, and, at the end of the building, falls into a very large cesspool along with the urine that flows along a gutter in front of the seats. The plan, as well as the position of these offices, is faulty. They are south-west of the soldiers' bazaar at a distance of about 40 yards from it, and are a nuisance, which would be denounced, and would on no account be tolerated, in a similar position, by any military population.

5. The hospital is about $4\frac{1}{2}$ furlongs in rear of the men's lines and beside the commissariat yard. It has two wards separated by the surgery. There are ridge ventilators and the means of perfusion and ventilation, but, the glazed windows of the wards and of the enclosed verandas being within command of the inmates, they were found at the inspection to be all shut, both on the windward and on the leeward sides.

6. There are no bathing-rooms attached to the hospital, and the sick, whatever the state of the weather may be, have, when they bathe, to go to the side of a well, where there is no cover for them. When a warm bath has to be given, the tub has to be placed on the earthen floor of the ward, which thus gets wetted. The difficulty of keeping the earthen floor unbroken is complained of.

RECOMMENDATIONS.

(a.) The roof ventilators of the men's *pendal* should be protected from the indrift of rain by a sufficient overlap of the raised portions.

(b.) The waste bathing water of the families should be conveyed away in surface drains made of roof tiles joined with lime-mortar, as recommended for general adoption in Sanitary Commission's letter No. 387, of 1866.

(c.) New latrines, according to the design which has been recommended by the Commission, should be built, at a shorter distance than the present ones are from the north end of the men's lines, and there should be tank carts employed in connection with them. No cesspool should be allowed.

(d.) There should be moveable glazed frames over the doors and windows of the hospital, so that fresh air may be admitted without a draught blowing directly on the sick.

(e.) A bath-house, consisting of two rooms, should be built adjacent to one of the rear corners of the hospital; it should be near, but not actually continuous with, the veranda, and should have a plinth of sufficient height to allow of the waste water flowing by pipe to water a garden.

(f.) The floor of the hospital should be paved.

GIZREE SANITARIUM.

THE barracks are about three miles south of Kurrachee Cantonment, and on a promontary between the Gizree and Chinnee creeks. The boundary of the land annexed to the sanitarium at one time included the elevated plot of ground on the west, called Clifton, but now the military limits are greatly contracted. Between the sanitarium and Kurrachee Cantonment there is no cultivation, and only a nearly bare waste. Towards the west and south there is a rather steep descent, over loose siliceous and micaceous sand, to a sandy plain or to a succession of low sand hillocks thinly sprinkled with *salsola* and *calotropis* bushes, and that intervene between the barracks and the sea. In this direction, although in it the sea is nearest, the nature of the ground renders access to the beach impracticable, and, on account of the depth of the sand and its constant drifting with the wind, no ordinary road across it could be maintained. The invalids have to make a circuit by Clifton, along a harder path, to reach a bathing-place. Towards the south-east the ground falls more gently until, about half way to Gizree Bundur, it meets the tidal fore-shore, where there is a great extent of land that is covered only by the high spring-tides, and a yet wider extent which is submerged daily by the ordinary tides. On the reflux of the water at springs, a surface of mud of many miles is laid bare at the mouth of the creek. The shore on that side is muddy and unsuitable for sea bathing.

2. Eastward of the barracks, and near them, there is a ravine, with precipitous but not very high sides, and with a flat bottom of alluvial soil, which after rain is a swamp that is frequented by snipe. An earthen dam was thrown across the gorge at its lower or eastern end, with a view to impound the storm waters for use. The object has not been gained, and evil instead of good is caused by the obstruction that is offered to the speedy outflow of the water. Wells that have been sunk in the ravine have, it is said, produced only brackish water. The area of the alluvial bottom is about 47 acres.

3. The rock, seen protruding on the surface of the ground and in the sections exposed in various places, and more largely in the bluff on the seaward face of the small, flat topped, rocky elevation that stands eastward of the barracks, is seen to be the same as that of Kurrachee generally,—a tertiary limestone with strata or beds composed almost entirely of comminuted sea-shells, interchanged with layers that have in their composition a large addition of clay or of siliceous sand. There are also seen beds of rolled nodules of foraminiferous limestone.

4. The barracks are in two blocks, on plinths only a few inches high. The walls, 12½ feet in height, are constructed of stone and clay mortar, and a tiled roof has its ridge pole supported on a row of pillars. The piers between the glazed windows or between windows and doors are 10½ feet broad. There is an open veranda on the south-west side. The only arrangement made specially for the purpose of renewing the air in the room is an interrupted line of ridge ventilators. Owing to inadequate overlap of the raised portion of the roof, rain is admitted by the gap.

5. Where the whole of the two buildings available as barrack-rooms for the men, they, according to the regulated allowance of floor surface, would hold 138 men. Were the correction of this according to cubage to be made, the capacity of the barracks would be only for 86 men. They are not, however, used solely as dormitories for the men. Portions are appropriated as guard-room, canteen, dispensary, and church, compounder's quarters, hospital, library, and orderly-room. There is accommodation left according to cubage for only 65 men, without any day or dining-room. The officer in command mentioned that the invalids here, contrary to the custom at other sanatoria, brought their arms with them, and that the records showed the evil that resulted, in quarrels among the men. This should be remedied.

6. The deficiency in conservancy establishment was stated to be the probable excuse for the precincts of the sanitarium, not the buildings themselves, being ill-kept and unclean at the inspection, as it was said they had been found, when, a few days before, the present officer in command took charge from his predecessor.

7. There is not sufficient accommodation for non-commissioned officers and the non-commissioned staff. The apothecary has a detached house, and the officer in command and the medical officer have their quarters under one roof. There are three houses for sick officers. Excepting the library there are no means provided for the recreation of the men. There is no day-room or dining-room.

8. The improvement of the buildings of the sanitarium was under consideration, and it was found that they could not be rendered satisfactory for the accommodation of European invalids, and the alterations were restricted to what was thought to be most immediately required. Detached lavatories are being built close in rear of the barracks, and as those who are very sick cannot in all seasons go to the barrack privy, about 70 feet distant, at the suggestion of the Sanitary Commission a small privy of temporary construction, bamboo and matting, is to be erected against the end of the lavatory, and it is recommended that it should be scrupulously reserved for the use of the very sick, lest it should become a nuisance to the barracks.

9. As, after rain, the water flows from the somewhat higher ground behind and lodges near the barracks, a trench is being cut to catch and divert any such flow.

10. It having been decided by Government that a new sanitarium for 200 men shall be built, and that Gizree shall be its locality, the ground was examined with the view of finding a suitable site. The ridge which is now occupied is much too small for the improved barracks and subsidiary structures.

11. The best site was found on the rather higher ground over which the cart-road from Kurrachee passes to Gizree, and which lies north and north-east of the ravine that has been mentioned. The surface is even, and has a moderate fall to the south-west, and also to the east and south. The extent is abundant for the purpose, and the part of the seashore where the men can bathe is equally easy of access from this spot, as from the present barracks. Drinking-water will still have to be brought from a distance.

12. The marshy bottom of the ravine would, if left in its present condition, be a grave objection to the occupation of the site to its leeward, but it would be rendered innocuous by removing the dam, and draining systematically and efficiently the subsoil. The drained ground would become exhausted of its superabundant saline matter, and might be beneficially turned into gardens, in which the waste lavatory water should be made useful. The hollow, so far as it lay to the windward, would intercept the drifting sand, which causes great inconvenience and annoyance in the present barracks and officers' quarters.

13. The

13. The subsoil drainage of the marshy hollow should be considered to be an indispensable preliminary to the occupation of the proposed new site, and the drains should be of a permanent kind and laid with the greatest care, and with true gradients, at about three or three-and-a-half feet below the surface, and at intervals adapted to the nature of the soil as to stiffness.

14. The aspect of the new buildings should be west, that being the point from which the wind blows most frequently in the hot weather, and also during the whole year. This recommendation is based on the result of the observations made during the five years 1860 to 1864. The calculated results show that the number of days in a year that it blew from the eight principal points were, from the—

North	-	-	-	-	days	13.0	South	-	-	-	-	days	5.2
N. E.	-	-	-	-	„	14.7	S. W.	-	-	-	-	„	36.8
East	-	-	-	-	„	32.5	West	-	-	-	-	„	166.2
S. E.	-	-	-	-	„	9.6	N. W.	-	-	-	-	„	52.0

It was calm on 33.2 days, and no observations were recorded on 5.3 days.

A. H. Leith, M. D.,
Deputy Inspector General of Hospitals,
President, Sanitary Commission.

REPORT on the SANITARY CONDITION of the TOWN of KURACHEE.

THE limits, within which the Municipal Act XXII. of 1850 is applicable, reach from Trinity Church, 12 miles westward, $5\frac{1}{2}$ miles northward, and $3\frac{1}{2}$ eastward, while they embrace Munora point, $5\frac{1}{2}$ miles to south-westward, and Gizree, $4\frac{1}{2}$ to the south-eastward. The area circumscribed by a line joining those points does not all belong to the municipality, as the cantonment, which it includes, is under military rule, and the sea makes large reservations on the south on behalf of Imperial ownership. Highwater-mark is close to the old town, which is two-and-a-half miles westward of the church, and, at the ebb of the tide, an exposed surface of mud stretches about four miles due westward from the town. On the south there is a tidal foreshore $1\frac{1}{4}$ mile broad, and spring tides send water, by still existing channels, to within 100 yards or less of the main or Bundur road.

2. Portions of the foreshore, over which the sea flows daily, are green with *Avicennia* bushes, but there is a large extent over which only spring tides rise, although in their rise and fall they differ hardly two feet from ordinary tides, the range of which is eight or ten feet. Neaps have a range of three or four feet. Little has yet been done directly in reclaiming from the sea, but the harbour works have prepared the way for future operations. It is the present intention to keep the tidal basin eastward of the Napier mole as a reservoir to give bulk to the tidal waters, so as to maintain the force of the current that scours the harbour and keeps its channel clear. It is hoped that in the course of time the more shallow margins of the foreshore will be reclaimed; it is such portions that are the most noxious to health. The unwholesomeness of the neighbourhood of the marshy ground cannot be denied, but the evil resulting from the swamp, in the form of fever, is far less than might have been expected. The influence of the malaria might be restrained by planting belts of trees, judiciously chosen from those that thrive near the sea.

3. The rock of Kurachee and its neighbourhood is tertiary, and is composed of strata or beds of comminuted marine shells, alternating with layers of limestone, now arenaceous, now argillaceous, and with beds of a conglomerate consisting of rolled modules of foraminiferous limestone, and like the conglomerate that is seen in great mass near the top of the Bolan Pass, and probably at intermediate places. At Munora, the Oyster Rocks, Clifton, and Gizree, the rock is scarped towards the sea, while its dip is north-westward. In creeks, such as the harbour, Chinnee, and Gizree creeks, the accession to the land from the sea is of mud, but there are sandy beaches west of Munora and west and south of Gizree, and the sand is siliceous with a large admixture of mica, altogether different in nature and economic value from the calcareous sand of Bombay, and apparently the detritus of granitic rock or of micaschist. There are low rocky hills at the eastern and the northern limits of the town land, but the rest of it is nearly flat, and in many places the rock is at the surface. This part of Sind is within volcanic range, as is shown by the hot springs issuing from the coralline rock in the crater-like hollow of Muger Peer, eight or nine miles north of Kurachee; the mud springs on the border of the Belooch territory to the westward, and the upheaval of the *Ullah-hund* and the submersion at Lukput, on the eastern side of the delta of the Indus, in the earthquake of the year 1819.

4. The abundance of easily wrought stone and of lime must be beneficial in affording, at a cheap rate, the means of having commodious and well built houses, as a defence against what may be hurtful in the climate.

5. The channel of the Lyaree river passes from north-east close by the old town, opposite to which it forms an island. The fall in the course of the river is so little, and the water is so scanty, except after heavy rain, that its bed is choked with sand, and any current there may be, is at other times subterranean. The sandy bed serves for the storage of fresh water, and numerous wells are sunk in it and in the gardens that line its bank. The water drawn from wells in the bed and banks of the Lyaree is much purer than is obtained from any other wells. Brackish water is abundant at Kurachee, and is, as regards salubrity, at some places too near the surface, as for instance at the gaol, where it is met at a depth of four feet. In some wells the water has a rise and fall corresponding with the flow and ebb of the tide. The well supplying the artillery plunge bath is an example of this, and it affords an illustration of the very considerable distance at which a well may drain the ground and receive from it the deleterious impurities with which the soil may be impregnated by those dwelling on it or depositing on its surface filth that may be carried downwards by the rain waters.

6. The subsoil in the neighbourhood of Kurachee is highly impregnated with saline matter, and its different beds vary much in the quality of the water they yield. It is said that it not unfrequently happened that a well that yielded tolerably good water in small quantity, when deepened with the view of obtaining a greater supply, had been spoilt by the influx of brackish water. Wells near one another vary in their products, and this is especially remarkable in those near the Lyaree. From a series of analyses of Kurachee waters by the chemical analyser to Government, it is found that the mean amount of solid contents of a gallon of water from two wells in the bed of the river was 28.28 grains, while from seven wells in gardens in the bank of the Lyaree the average amount was 70.35 grains, the quantities ranging from 50.26 grains to 129.50 grains. Away from the neighbourhood of the river there is a well beside the Rambagh tank that yielded 58.66 grains. Of the waters from 13 other wells none contained less than 84.63 grains in a gallon, and the average amount of saline matter was 772 grains. In those waters there were only minute quantities of organic matter detected.

7. It is not in the neighbourhood of Kurachee alone that this uncertain condition of the water yielding beds exists. The same uncertainty was found, from the analyses of the waters, to exist in the Muleer near Landee, about 10 miles from Kurachee, and in five of its tributaries. In one instance only was there no difference between the results of the examination of water drawn in the bed of the stream or watercourse and that drawn from its two banks: it was in the Jerinda branch. From each locality three samples, drawn from the bed and from each bank, were submitted to the analyser, and among three from one of the localities, one sample contained three times as much chloride of sodium as another. The water from the Muleer near the Landee railway station, that is below the point where it is joined by its tributaries, contained upwards of 50 grains of impurities in a gallon, and of these, 11 grains were of sulphates and 22 of lime and magnesian salts. None of the waters from those sources were such as should be considered good for drinking, and it is to be hoped that a purer water will be found for distribution and in sufficient quantity.

8. The water supply of Kurachee has for some years been under consideration. Several schemes have been proposed. One was to bring it by aqueduct from wells and galleries, 15 to 18 feet deep, in the banks of the Muleer about 16 miles distant, or above its junction with the Domb and Sokan. Another was to bring it from a reservoir to be formed, some miles more distant or near Dumlot, by a dam across an affluent of the same river where it passes through a gorge in the hills; this scheme embraced the construction of a reservoir to hold 16 months' supply to meet the contingency of drought, which is so frequent, and because the replenishing of the reservoir would depend on the uncertain local rain-fall. Another proposal was to bring water by canal from the Indus. Such a canal might subserve the purposes of irrigation in the first 40 miles of its course, but the engineer officer, who has investigated the scheme, finds that the heavy expense of constructing and maintaining the remaining 40 or more miles of canal would have to be borne for the sole purpose of supplying the town and cantonment, an expense beyond the present means of the municipality. There are at present two schemes under examination, one is a modification of the Muleer scheme, it being thought that a sufficient supply of water could be found in the sandy bed of the Muleer, six miles nearer than the spot originally examined, and below the junction of its tributaries. Water is there found close to the surface of the sand, which is said to be 12 or more feet deep, affording good storage. It is apparently the locality whence the samples of water above mentioned were brought. The other proposal that is under investigation, is to bring water from the Hubb river, a distance in direct line of $16\frac{1}{2}$ miles. The Hubb is described as having its source not far from Kelat, and, at the spot whence it is proposed to bring water, as having at all times water in its rocky and stony bed; sometimes the water may be reduced to pools, but generally there is a stream. Even when in pools, these cannot be easily exhausted, and at present 800,000 gallons are, it is said, raised daily by pump for the purpose of irrigation, yet the water is found as plentiful as before the next morning. There are frequent freshets in the river from its feeders in the hills of Beloochistan, and thrice a year, at the end of December or beginning of January, the end of March, and the end of July or beginning of August, the water rises 12 or more feet in the river bed, and, owing to the great fall of six feet in a mile, rushes like a torrent. There seems to be no room to doubt the

the sufficiency of the supply. A ridge of hill lies directly between Kurachee and the site of the proposed dam, and it has yet to be ascertained, by levelling, whether a gradient can be found by which to lead the water to the town. The source of the water would itself give promise of sufficient purity, but this is not confirmed by chemical analysis of a sample which was drawn on the 24th December. It was found to be largely impregnated with saline matter, the total impurities in a gallon amounting to 75·53 grains, of which 40·14 were common salt and 27·76 were sulphates. There was only a quarter of a grain of organic matter. This analysis is very unfavourable to the prospect that was entertained of obtaining the supply from that part at least of the Hubb. Investigation should be made to ascertain the source of the saline impurities, whether they are brought by the stream from its sources, or, as is more likely, they are dissolved out of the substratum in which water is stored within a limited distance from the point whence the sample was taken. Samples from points higher in the river should be analysed. An abundance of good water is essential to the welfare and prosperity of Kurachee, and it may have to be brought even from the Indus.

9. Drainage is a necessary concomitant of a large water supply, and it should be duly provided.

10. No dependance can be placed on the local rain-fall for an adequate supply of good water; the appended Table shows the irregularity in the time and the quantity of the fall.

11. The scantiness of the rain accounts for the arid and bare aspect of the country. Where fresh water is applied to irrigation, the soil does not show any want of fertility. Were there a plentiful supply of water to allow of the cultivation of gardens and the watering of roads, there would be not only relief to the eye, by the substitution of verdure for the hoariness with which the fine white dust now covers the scanty euphorbia hedges and meagre parkinsonia and tamarisk bushes, that form the greater part of vegetation about the houses; but, as a dusty atmosphere retains more of the sun's heat than a clear one does, the dry temperature of the hot season would be considerably lessened by laying the dust, while the ground, when clothed with vegetation, would absorb less heat in the day-time and would give it out more freely at night.

12. The situation of Kurachee on the coast, with the open sea towards the south-west, is most advantageous, as the monsoon breeze from that direction cools the atmosphere and, with the clouds it brings, lowers the temperature. The heat otherwise on this the borders of the tropic (the latitude being $24^{\circ} 51' 9''$) would be intense during the four weeks that the sun hovers within two degrees of being vertical, or the six weeks that, with hardly less power, it shines while lingering within four degrees of the zenith. The result of recorded observations as furnished by the Superintendent Government Observatory, Colaba, during the five years 1860 to 1864, shows the monthly average temperature to be—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Minimum	51·58	55·79	60·63	70·38	76·07	79·68	79·64	77·43	75·90	68·45	59·50	54·79
Mean	68·01	73·67	77·89	83·78	86·55	87·95	85·43	83·37	84·49	84·10	79·28	72·19
Maximum	73·16	79·22	83·14	88·69	90·90	91·77	88·46	86·21	88·07	89·14	84·76	77·46

13. The direction of the wind in the different months of the year, as recorded during the five years 1860 to 1864, is shown in an appended Table. The westerly wind from off the sea is by far the most prevalent in the hottest seasons of the year, and in all the year the west breeze blows 162·2 days, and during the semester of the north-east monsoon, while the land wind from that point and the east blows during an aggregate of 45·0 days, it alternates with the north-west breeze that blows for 18·4 days. Viewing the whole year, the north-west wind blows during 52·0 days, and is next in prevalence to the west. A due southerly wind is the least frequent, its yearly aggregate being only 5·2 days; from the south-east it blows 9·6 days.

14. The results of the observations of the wind should be used as a guide in determining the aspect of dwellings and public buildings, so that they may be most fully benefited by the breeze in the hot season, and, on the other hand, in choosing the position for the disposal of what is offensive, so that the effluvia may be least frequently wafted over the dwellings by the wind.

15. The wide extended limits of Kurachee include scattered and distant villages and hamlets, which have not now been visited. There are others that, from their size and proximity to the large centre of population, require more particularly to be included in the general schemes of improvement; among those are Meeran, the Bagdadee Lines, which are the chief residence of labourers; the oil mills; the tanneries on the north side of the left branch of the Lyaree; Bhistee Wara, and the soldiers' bazaar to the northward of the cantonment.

16. The new part of the town, that stretches from the Napier Mole to the cantonment and along the sea shore, where laid out for building, has wide streets in which there is already a considerable number of spacious, well-built houses, many of which are of ornamental architecture. Besides these, there are railway buildings, mills, and public buildings, such as those of the Charitable Dispensary, the Indo-European Telegraph, Government House, and Frere Hall, a tribute of gratitude and respect to the former ruler of the province.

17. The old town of Kurrachee is on the east shore of the harbour, which at low tide presents an extensive surface of mud, that in former days had to be traversed by passengers in canoes dragged as sledges by the fishermen. The water way has been improved, and the jetties at the upper and lower ends of the mole, that joins Keamaree island to Kurachee, afford now facilities of landing at all hours. The old town is a densely built mass of houses, that stand on the accumulated rubbish of those that preceded them, and thus have a somewhat higher elevation than the surrounding ground. The irregularity of the narrow streets and lanes is so great as to baffle any attempt at a description of their direction, and the numerous winding and crooked blind alleys render the place a maze, that can hardly be explored without an experienced guide. The narrowness and crookedness of the passages hinder the free admission of the breeze to carry off the vitiated air and noxious exhalations of the ground, impregnated as it is with excrementitious matters, and shut out the sun's beams, which, if admitted, would help to purify all they shone upon. There are some new streets that have been added to the north-east side of the original town since the assumption of the Government by the British, and these are built in parallel lines, such are Napier Road, Puncham, Kuchee, Kেমচুন্দ Streets, and Marriott Road on the east. Lala Brahmun Street, that leads into the town from the Lyaree, was improved some years ago, and is straight, and has a regular row of shops on each side, with a continuous bench of cut stone in front, under which is the side gutter for carrying off the rain water. These gutters appear to be choked, and to be a shelter for filth and vermin, and, as the massive masonry that covers them renders it troublesome to keep them clear, it would be well to remove it. Many of the old streets are paved, but the pavement has to be sought for in general under a coating of accumulated sand and dried mud, and when found it is seen to be much out of repair. Unless where the amount of traffic with wheeled vehicles renders it of importance that the streets should be macadamised, it is far better that the old custom of paving them should be revived. Pavement lessens the quantity of dust, and causes the storm-waters to flow off quickly so as not to penetrate into the ground, and there to aid the process of putrefaction in the organic matters stored in it, and which, if deprived of moisture, might lie dormant and innocuous. Pavement, if well laid, hinders the soaking of impurities into the ground, and it lessens the exhaling surface from which deleterious vapours or gases can rise. The organic impurities that fall on a pavement exposed to sunshine and fresh air, become oxidised and harmless without passing through those intermediate stages which are productive of poisonous gases, and which are gone through, when, underground and excluded from fresh air, they are supplied with moisture.

18. The municipality has not altogether abandoned the use of pavement, and is now about to pave, at least the middle of, a street of horse-shoe shape, that has been opened to a width of about 50 feet round the south-western and greater part of the town. The paving in the centre, which is to be depressed, is intended to carry off the storm waters, which, although of unfrequent occurrence, yet are sometimes very copious and rapid in their descent.

19. The ground-floor houses or huts on the outskirts of the town are built of sun-dried brick or mud with flat roofs, and often have little yards enclosed with low mud walls. The Bagdadee Wabree and other villages and hamlets are mostly of this description of dwelling, but the suburb or quarter called Muchee Meeanee, on the south-west side of the town, is mostly of huts enclosed with matting. Most of the houses in the town are of two or more floors. Many of those in the newer parts are substantially built of stone and lime-mortar, and, being the property of merchants and dealers who have immigrated for the purposes of commerce, are like in design to the houses in Bombay or in the towns of Goozerat. The buildings of the Sindian inhabitants have the walls of all their floors made of wooden frame work, interwoven with the small rough wood of branches or young trees, and when being constructed they look like enormous crates. The interstices of this wicker-work are filled with clay mixed with chopped straw, and the terraced roofs are plastered with the same material. This kind of construction answers on the whole very well at Kurachee, where the rain fall is scanty, but, when heavy rain does fall, as it did in August last, it demolishes the walls, or melts them and leaves bare the frame work. Kurachee at the time of this visit had not recovered altogether from the ruin and destruction caused by the unusual down-pour of rain. The ruins that are not rebuilt within a reasonable time should be removed.

20. The blocks between the thoroughfares are sometimes an irregularly chequered collection of houses, with small unpaved courts and mazy passages. Sometimes the houses, although of great depth, are built back to back and side to side without any interval, and with only the front in which there can be any door or window to admit the light.

21. Were it not for the wind towers, or *badgeer*, that are in universal use, it seems impossible

impossible that human life could be maintained in such dwellings. Every house and hut has its wind tower rising above its flat roof, and with its opening directed to the south-west. Sometimes it is but two or three feet in height, and is shaped like a scoop or shovel. Sometimes it is big enough to be the doorway to the ladder or stair, which there is in every large house to give access to the terraced roof. The wind tower is used with the object of catching the cooling monsoon breeze to moderate the great heat that is experienced when the sun is near the tropic; but far more essential, although unsought, benefit must accrue from its performing at all seasons the office of an outlet for vitiated air. The remains of wind towers are seen in some of the old buildings of the cantonment. The contrivance does not appear to have been well understood by those who adopted them, and they must have been very inefficient. With the free perfusion that is secured to all the more recent barracks and their subsidiary buildings, the wind tower is superfluous. In dormitories placed, as are some of those in the gaol, close to the leeward of a high wall, the wind tower would be useful, and, in the report on the condition of the gaol of this place, its more extended use has been recommended.

22. No amount of such ventilating openings could compensate for the want of free access for fresh air into the passages and courts and lower apartments of the houses, and the municipality should not delay to open straight, wide thoroughfares through the town. This should be undertaken systematically, and be carried out perseveringly. When the plan of the town that is now being prepared is finished, a project of such streets should be devised, and in the new Municipal Act, which has been applied for, the power which is now wanting should be obtained, to acquire the necessary ground, and also to enforce the building of houses in line. The new streets should cross at right angles, and should have directions south-west and north-east, and north-west and south-east, with a view to the freest admission of the breeze for ventilation, with the best arrangement for allowing of all sides of the blocks of building participating in the purifying influence of direct sunshine. By cutting main streets through the town in the directions mentioned, the houses, as they have in progress of time to be rebuilt, would assume corresponding aspects, and each block would eventually have a side exposed more or less directly to the sun shining from the east, the south, and the west, and would have only an angle, no side, turned to the sunless north.

23. The population is chiefly Mahomedan, but Hindoo and Moosulman habitations are much alike. The mass of the people gives evidence, in the condition of its clothing, of the scarcity of fresh water, and the difficulty of abstersion with brackish water.

24. The domestic habits that were discovered at this inspection are in several points prejudicial to health. Besides the living and sleeping in confined, imperfectly ventilated, rooms, the little courts are unpaved and are made the receptacles of sweepings and refuse, often having uncovered pits, into which liquids of the foulest description are thrown and left to sink into the ground. Sometimes in a corner of a ground-floor room there is a privy without a door and communicating with a cesspit, close to the foundation of the house, and situated either in the court or in the neighbouring street. The cesspit never has any trap to cut off its communication with the interior of the house, and the poisonous gases, rising from it, penetrate into all the dwelling and sleeping rooms. The cesspit is sometimes of masonry, or is excavated where the ground is rocky and slow to absorb the liquids, and in such case it is opened to be emptied, when it is so full that what is poured in regurgitates and remains on the floor of the privy. More usually the pit is absorbent, and its contents soak into the foundations and the surrounding earth, and some of these are never cleared out. One householder, who was questioned, said he had inherited the house, and ten years ago had rebuilt it, but the cesspit which had been in existence before he came into possession had never, to his knowledge, been opened for the purpose of being emptied.

25. Many of the inhabitants of the old town have their privy on the terraced roof of the house, and the sweeper visits it more or less frequently. This arrangement is said to be universal in Shikarpoor and other towns of Upper Sind, but there no sweeper is employed, all is left to the drying influence of the sun and air, and to the dispersing power of strong winds. At Kurachee the want of proper kinds of vessels was observed to be the occasion, in some instances, of some injury to the clay of the roof, but the house-top privy visited by the sweeper is incomparably less objectionable than that in the interior of the house and communicating with a cesspit. Unbuilt places, ruins, and even the streets, gave evidence that there were many who had no private convenience in their dwellings.

26. The keeping of cattle in houses and in adjoining confined, unpaved, courts or yards is very common, and is at Kurachee productive of greater nuisance than in any Indian town that has been inspected, owing to the air being much more offensively vitiated by the camel than by other domestic animals. The camel here takes the place of the bullock, not only in carrying loads, but also in the mill, and some of the premises visited were, to the unaccustomed senses, very revolting. The camels worked in low, dark sheds, and heaps of the decayed refuse of their food lay in the small court, and the ground was moist with the fluid excreta, that were poured into holes dug in it. Two of the mills that were seen were for grinding flour, which must have been contaminated with the powerfully offensive atmosphere in which the work was carried on.

27. The narrowness of the streets is a great impediment to thorough scavenging. There are comparatively few into which carts could be taken, and the removal of refuse can only be done in baskets or by camels or asses. There is no difficulty in disposing of filth; even night-soil is readily taken by the cultivators to manure their land. There are not many public latrines; those that were seen were at the soldiers' bazaar, and were merely small walled enclosures without seats and without pavement.

28. The municipality has removed from the town to the other side of the Lyaree some of the offensive trades, the distillery, the oil mills, and the wool washing. The site for wool washing has not yet, it appears, been finally fixed. The ground that has been marked out for the purpose is on the island, or rather what becomes an island, between the two branches of the Lyaree when the river is in flood, and lies between the new oil mills and the tanneries. The tanneries, which had been removed not long since from the town, have been complained of as offensive in this, their new, situation, by persons residing on the left bank of the Lyaree, and are consequently about to be again removed to a distance of several miles, northward. This experience gives rise to apprehension that the wool washing also would be found offensive during north-westerly winds, if carried on at the spot that has been marked out. Another place has been proposed, which is at a greater distance from the town, and lies north-eastward from it and northward of the cantonment. This place is near the bifurcation of the river and on the north side of all its branches. If this locality, which seems to be suitable, is finally chosen, the work should be confined to the ground opposite the right branch of the Lyaree, in order to avoid contamination of the bed of the left branch, which affords storage for the best drinking water that is obtainable at present. Any refuse thrown into the sandy bed of the river would soon find its way into wells, even were they a considerable distance lower in the course of the stream. The removal of the fishermen of the Muchee Meeanee quarter, at the south-west or windward of the town as regards the prevailing breeze, has been attempted, and now it is thought that their objections have been overcome, and a new village is being laid out in which raised foundations for the houses will be provided, and inducement will be given to the fishermen to adopt a more wholesome kind of dwelling than they have hitherto had. The completion of this scheme is greatly to be desired.

29. There are in the town many dyers' workshops, which might, with advantage, be removed altogether to the north of the Lyaree, where the water storage could not be contaminated by them. Distilleries and all works yielding noxious refuse should be at a distance from the south branch of the river.

30. There are several markets. At Muchee Meeanee there is a fish market in an octagonal building with four entrances. It is well paved and guttered within, but there is no provision made for its drainage. The water with which it is washed is thrown on the surrounding ground. It is very objectionable thus to impregnate the soil with organic matter, which will be eventually a source of unwholesome exhalations. There is another market at the south side of the town and beside the Bunder-road; it consists of three well-paved airy sheds, of which one is appropriated for beef and mutton, one for vegetables and fruit, and the third for fish, and it is in it that the *pulla*, when brought in its season from the Indus by railway, is exposed for sale. The ground around this market also is unpaved and undrained. There is a railed enclosure beside it, in which cattle are sold.

31. There is a square at Kara Durwaza, where carriers are allowed to halt with their camels. The place was seen to be nearly covered with mat huts and enclosures in a dirty condition. It would be better that such encampments should be in, or beyond, the suburbs, and that all available spaces, as well as streets, should be kept as reservoirs and channels of fresh air, to replace the air that is being constantly vitiated in the neighbouring houses.

There is, not far distant, another square where bales of merchandise are allowed to be laid. It retains the name of Koree from a tank or pool that was formerly there, and which was filled up and prepared for its present legitimate purpose. There is another market; it is the Cunyngham Market in the Sudur bazaar. It consists of tiled sheds of moderate height, and forming a rectangle; three are completed, and have been for some time in use; one for the sale of mutton, another for beef, and the third for vegetables and fruit. A fourth is being built for fish and poultry. The sheds are paved and are kept clean, but the court is unpaved, and there being no provision for drainage, the soil, and, as a consequence, the atmosphere over it, will in time become polluted.

32. The Sudur bazaar, which has for some years been under municipal rule, was closely inspected in connection with the cantonment, and its condition was mentioned in the report that was made on the military part of Kurachee. This bazaar is a small town laid out with regularity. Five wide streets run north-west and south-east, and are crossed by two wide streets and many smaller that run south-west and north-east. The ground, thus divided into rectangles, is closely built over in great part of its extent with tiled houses of different sizes and heights, but most of them have one or more upper floors. Many of the houses are large and substantially built. The rectangles, included between Elphinstone-street and Frere-street, are sub-divided by small streets that contain a very dense population. The streets, and, with few exceptions, the courts, were clean. The privies also were as clean as the sweepers could make them, and lime was freely used in many. The administration of the Conservancy establishment was found to be efficient.

33. There is here also the system of cesspools which exists in the towns, but it is far more

more general. There are a few common privies which have a common cesspit, into which all that is liquid, and all that is borne by the water that is used, flow. It is more usual for each house to have its own privy, and, as a matter of course, every privy has its cesspit in the street or a back alley close to the foundation of the house, or in a small court, or even in the veranda. The privy is in some instances carefully partitioned off from the rest of the house, but not unfrequently it is here, as in many houses in the town, in a corner of the lower room, and without a door of separation. In nearly all houses the waste-water pipe from the bathing-place, whether in the upper or lower floor, communicates directly with the cesspit, without break and without trap, and allows the poisonous gases of putrefying excrement continually to pervade the dwelling. Some of the cesspits are built, others are mere absorbment pits, dug in the ground and covered with slabs more or less loosely jointed. They are always used until, from the privy being flooded with filth, it is known that they are full and will admit no more. Leave is then asked to have the pit emptied, and a printed permit is given, and in it the number of days which the work will be allowed to occupy is specified. The time during which those of the neighbourhood and the passers-by are obliged to endure the grievous nuisance caused by the open cesspit, may be four days, if not more. Taking into account the very great number of cesspits that there are, it must be but seldom that there is not some of them in process of being emptied. But even when the pits are closed, the smell from the saturated ground in which they are is sickening. This was experienced at the inspection, when, although the morning was still, the air was cold and very dry, and much less favourable for carrying the effluvium than warmer air more loaded with moisture, would be. This condition of the soil is highly dangerous to health and life, not only in the contingency of an invasion of cholera, which, under such circumstances, would be rendered very virulent, but it will probably, if continued along with the overcrowding, produce a deadly fever such as prevails in Bombay, and has been very destructive in some overcrowded gaols and ships. Such a fever is not likely to be confined to those among whom it originates.

34. In the soldiers' bazaar likewise there are many houses that have cesspits, and the ground there also gives out a sickening odour. Measures should be taken, without delay, to abolish all cesspits in the Sudur bazaar, in the soldiers' bazaar, and in the old Town. In connection with the abolition of the cesspits, the inhabitants should be required to furnish their privies with vessels that will retain liquids, and it should be considered to be incumbent on the municipality to provide a sufficient number of tank-carts to visit every night all parts of the town to receive the filth.

35. The removal or effacing of the cesspits should be carried on diligently yet cautiously, and use should be made of deodorants, of which the liquid carbolic acid is perhaps the cheapest of those that are the most efficacious. When a cesspit is emptied, quicklime in large quantity should be thrown into it, and it should then be filled up with fresh mould, the earth that before covered it being carried away. If any epidemic fever or cholera should appear while the cesspits are being emptied, the work should, for the time, be intermitted, because the greater concentration of the poisonous emanations that arise from the open pits, than of those that come through the soil when they are covered, would give intensity to the disease.

36. The number of retail liquor-shops licensed in the Sudur bazaar is three; of which one is for European liquors, one for both European and country liquors, and one for country liquors only. In the soldiers' bazaar there is one shop for European liquors and one for native liquors.

37. There are no burials in the town; all burial-grounds there were summarily closed by the first ruler of the province, after it was taken possession of by the British. The burial-places are not registered, nor is there any record kept of the deaths with reference to different localities of the town. Graves of the depth of only four feet are allowed, a depth that is insufficient.

38. There is no census of the town that can be relied on. The population is estimated variously, but generally, at about 70,000. A census is very desirable as well as a mortuary register, as it is only by aid of them that any correct opinion can be formed of the insalubrity, or otherwise, of a quarter or street, and that measures can, with confidence, be taken for the amelioration of alleged evils.

39. The income of the Municipality last year was 2,45,761 rupees. It was derived chiefly from house tax, wheel tax, water rate, markets, and slaughter-house, liquor licenses, land rent, and sale of right of the occupancy of land, fines, octroi duty, transit dues on merchandise, including cotton, wool, seeds, sugar, grain, and ghee.

40. The Municipality maintains a secretary and surveyor, who has the more immediate management of its affairs. In the Conservancy establishment there is a European inspector of nuisances. A charitable dispensary is supported, and grants-in-aid are given to schools.

41. The chief recommendations that have been made may now be repeated shortly—

(a.) To reclaim the shallower parts of the tidal foreshore, and especially those covered only at spring-tides. To plant belts of trees as barriers to malaria.

27.

S 4

(b.) To

(b.) To obtain, whatever the cost of it may be, a supply of good water, and in sufficient abundance to allow of gardens being cultivated and the roads being watered. In the meantime to keep the bed of the Lyaree and its left branch, from which the least impure water is now obtained, free from pollution by distillers, wool washers, dyers or others.

(c.) To devise a scheme of drainage to be carried out on the introduction of the water supply.

(d.) When buildings are undertaken, to give to all single houses an aspect towards the prevailing wind. To open wide avenues through the town, and to lay out the streets, so that blocks of buildings may, to the greatest amount, benefit from ventilation by the wind, while at the same time they may have sunshine on all their sides.

(e.) To remove ruinous houses. To keep the paved streets clear of mud and sand. To repair the old pavement of streets, and to pave the streets and lanes that are to be made, as well as the existing ones that are to be maintained.

(f.) To cause all courts of houses to be paved. To cause all houses or courts in which cattle, and especially camels, are kept to be not only paved, but also drained and well ventilated. To have all houses where camels are kept, registered, and regularly inspected to ensure cleanliness. To have the circuit of markets paved and drained.

(g.) To abolish cesspits. To provide for the regular visits of tank carts to carry away liquid refuse and night soil.

(h.) To render it obligatory on all who build houses to provide privy accommodation. To supply the present deficiency with public latrines.

(i.) To carry out the scheme for the removal of the fishing village.

(j.) To regulate the occupation of houses, according to their size and the means of ventilation.

(k.) To register all burial grounds; to require graves to be six feet in minimum depth. To register all deaths, according to the locality or quarters of residence in the town, and to tabulate the deaths weekly, monthly, and yearly.

(l.) To obtain a census of the town.

A. H. Leith, M. D.,

Inspector General of Hospitals,

President, Sanitary Commission.

RESULTS of OBSERVATIONS on the Direction of the Wind during the Five Years, from 1860 to 1864, at the Meteorological Observatory at Kurachee, showing the Average Number of Days (or Decimal Fractions of Days) in each Month that it blew from each of the Eight principal Points of the Compass.

Direction.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
North - -	1.1	2.3	2.5	1.1	0.6	0.0	0.4	0.6	0.3	1.2	2.6	1.2	13.0
North-east - -	3.0	2.1	1.2	0.3	0.2	0.0	0.2	0.1	0.3	1.4	2.3	3.6	14.7
East - -	11.1	3.8	0.8	0.2	0.1	0.2	0.1	0.0	0.5	1.2	5.3	9.2	32.5
South-east - -	1.9	2.5	1.3	0.0	0.0	0.1	0.4	0.1	0.1	0.5	0.5	2.2	9.6
South - -	0.4	0.9	0.0	0.2	0.9	0.5	0.1	0.0	0.1	0.3	0.9	0.9	5.2
South-west - -	1.6	1.5	3.5	1.7	4.3	5.2	4.0	5.4	3.3	2.3	2.4	1.6	36.8
West - -	5.2	8.6	13.1	20.7	21.0	20.7	18.5	14.6	15.6	12.4	6.7	5.1	162.2
North-west - -	2.2	1.9	3.8	3.4	3.0	2.7	6.3	9.3	8.9	6.6	2.7	1.2	52.0
Total - -	26.5	23.6	26.2	27.6	30.1	29.4	30.0	30.1	29.1	25.9	23.4	25.0	326.9
Calm - -	4.5	4.8	4.8	2.4	0.9	0.6	1.0	1.6	0.7	3.3	5.3	4.3	33.2
Observations omitted - }	-	-	-	-	-	-	-	0.3	0.2	1.8	1.3	1.7	5.3
TOTAL Days -	31.0	28.4	31.0	30.0	31.0	30.0	31.0	31.0	30.0	31.0	30.0	31.3	365.4

THE MONTHLY RAINFALL during the Eleven Years, 1856 to 1866, recorded at the Meteorological Observatory, Kurachee (furnished by the Superintendent of the Government Observatory, Colaba).

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
1856 - - -	1·02	0·55	0·00	0·00	0·00	0·04	0·05	0·25	0·00	0·00	0·00	0·00	1·91
1857 - - -	0·17	0·51	0·00	0·00	0·00	0·00	0·29	4·34	0·37	0·00	0·00	0·00	5·68
1858 - - -	0·00	0·00	0·00	0·00	0·00	0·03	4·04	0·09	0·51	0·00	0·00	0·27	4·94
1859 - - -	0·00	0·00	0·02	0·00	0·00	0·00	4·90	0·00	1·08	0·00	0·00	0·20	6·20
1860 - - -	1·09	0·00	0·00	0·00	1·22	0·00	0·00	0·50	0·00	0·00	0·00	0·00	2·81
1861 - - -	1·78	0·00	0·00	0·00	0·00	0·00	1·14	3·39	0·00	0·00	0·00	0·54	6·85
1862 - - -	0·27	0·00	0·21	0·00	0·00	0·06	2·86	0·76	0·40	0·26	0·05	0·00	4·87
1863 - - -	1·02	0·11	0·00	0·00	0·00	1·29	5·37	4·22	0·00	1·59	0·00	0·30	13·94
1864 - - -	0·64	0·00	0·00	0·05	0·29	0·00	3·17	1·77	0·00	0·00	0·00	0·36	6·28
1865 - - -	3·43	0·45	0·41	0·00	0·00	0·00	0·22	1·64	0·00	0·00	0·00	0·85	7·06
1866 - - -	0·76	0·18	0·21	0·00	0·00	0·03	0·00	11·80	0·77	0·00	0·00	0·00	13·75
Average - -	0·93	0·16	0·08	0·00	0·14	0·13	2·00	2·61	0·28	0·17	0·00	0·23	6·75

REPORT on the GAOL at KURACHEE.

(Inspected in December 1866.)

PRESENT:

A. H. Leith, M.D., President.
Gordon Asher, M.D., Member and Secretary.

THE gaol stands on the north of the original town of Kurachee, and on land that is as yet but little occupied with buildings. The level is not much above that of the sea level, and water in wells in the gaol is only four feet below the surface of the ground.

2. The building, the walls of which are of stone and lime-mortar, faces the west, and on that side has a railed garden, behind which there is a palisade that encloses the hospital. At this side, and built against the high boundary wall of the criminal part of the gaol, are also the yards of the native debtors and the untried prisoners. The wards of those two classes have interrupted ridge ventilators over the middle rooms and wind towers over the end rooms. They have only plank doors, and when they are closed the only ventilating openings are those in the roof.

3. The *female prison* is inside the high wall against which the wards of the untried and debtors are built, and is thus cut off from the direct access of the prevailing wind. Here also there are only interrupted ridge ventilators, and over the end rooms wind towers, that are intended to catch the westerly breeze. There are only plank doors.

4. There is an uncovered well, beside which there is a pavement on which the women bathe, and from which the waste water flows through a hole in the wall into a cesspit, in a passage between the female and the male parts of the prison. From the cesspit the water has to be baled out by hand, and it is thrown out on the ground outside the prison walls.

5. *Male Prison.*—The dormitory yard that is at present occupied by the male prisoners is in the newer part of the gaol. It is 240 feet by 217 feet in extent, and has 10 dormitory sheds for males, on plinths 10 inches high, with tiled roofs, on posts nine feet high and with open sides. It is said that in cold weather the sides are closed with mats, and at the inspection visit, near the end of December, the want of them had begun to be felt. Each shed is 87 feet long by 16 feet wide, and, as every prisoner is allowed only 40 feet of floor surface by the Government of India, the running measurement for each is five feet, the shed being occupied by two rows. There is accommodation for 340 prisoners in this yard.

6. There is a very large yard appropriated to cooking and to meals. It has no shelter whatever from either sun or rain; the cooking is done at uncovered fireplaces.

7. In an adjoining yard are the work sheds. They are large, and more lofty than those of the dormitories. Weaving is the chief work done, and the dyeing of the material is carried on in this yard; it is on a small scale, yet it is objectionable, especially as there is no proper system of drainage for this or for any part of the prison. From one yard the waste bathing water flows into the open trench at the side of the public road, where it forms pools. This ditch will in a short time become offensive. From the work yard the water is discharged on the nearly level ground close outside the wall, where the ground is kept moist.

8. The dormitory in the old gaol is not in use at present, but when the prisoners are numerous it is occupied. The sheds in this part of the prison are of better construction than those in the new gaol, having greater projection of the eaves on one side and a veranda on the other. The sides here also are open. The sheds, however, are objectionably placed very near the high boundary wall, and form three sides of a square.

9. The *solitary cells* are in rows, placed back to back, with a narrow intervening passage. They are on plinths $1\frac{1}{2}$ feet, or two feet high. The cells are ventilated at the ridge, and each has a barred door. The floor surface of the cell is 10 feet by 10 feet, and its height is 12 feet. There is in each a little closet which was intended for a night vessel, but its door has been removed, and the placing of the vessel there was discontinued, probably on account of the offensiveness that must have resulted from the want of separate ventilation. Each cell has a small enclosed court in front.

10. *Cells for European Prisoners.*—These are in a range of 10 rooms on a plinth about a foot in height, and have the high boundary wall of the prison, 25 feet, behind them. The rooms face the west. They have each a floor surface of 18 feet by 12 feet, or 216 square feet, and a height of 17 feet, which gives a cubage of 3,672 feet. They have an inner barred and an outer plank door; the doorway is low, and the arch head is built up. Towards the west there is an open veranda, and over it there are clerestory ventilating openings. In the rear wall there is a barred window, and in the roof there are interrupted ridge ventilators, which here, as in all the other rooms, are insufficiently protected from the indrifting of rain. Of the 10 rooms only four were occupied at the time of the inspection, but each was overcrowded from having three inmates. The excuse given for overcrowding in two of the cells was that there were 12 prisoners, and, as there were but 10 cells, more than one had to be put into one room, and as there was a rule against two men being the only occupants of a cell, three had been placed in each; the reason for overcrowding the others was not given.

11. There is a small bungalow on a very low plinth for *European civil prisoners*, beside the criminal yard, and without a distinct entrance, and without sufficient means of separation between the civil and the criminal prisoners.

12. The *hospital* has the advantage of having merely a palisaded fence in front. The ventilation is deficient.

13. The gaol clothing was being completed with thick jackets of a woollen texture, made by the prisoners. No mattresses were given.

14. The gaol was clean, and since it ceased to be overcrowded it had been healthy.

RECOMMENDATIONS.

(a.) In making any additions or reconstructions that may be required, it should be borne in mind that the subsoil water line is only about four feet below the surface, and therefore it is highly desirable that higher plinths than the present should be given; none should be less than two feet in height, and it would be advantageous for dormitories to interpose a layer of asphalt of the Persian Gulf bitumen between the foundation and the plinth that is raised over it, to prevent the ascent of moisture by capillary attraction.

(b.) The drainage should be systematically arranged, and the waste water should be conveyed in small open masonry drains beyond the walls of the prison, and then either in a continuation of such drains, or by piping, as may be found most expedient, to be used in irrigating a vegetable or other garden. The natural dampness of the site renders it the more necessary that the drainage should be efficiently carried out. The present practice of discharging the waste water close to the prison walls should be at once discontinued.

(c.) In the female yard a more perfect bathing pavement than the present should be built, and its drainage should form part of the general system of draining of the gaol.

(d.) Although there is not great depth of water in them, the wells should all be covered, to prevent accidents and attempts at suicide.

(e.) The dyeing of material within the prison walls should be discontinued, unless some better provision be made for the disposal of the refuse water.

(f.) The ridge ventilators of the rooms of the untried and the debtors should be made to extend continuously the whole length of their respective roofs, and the overlap, even with a gap of but eight inches, should not be less than three feet. If so great a projection of the raised portion of the roof cannot be made so as not to droop, then with a wider gap struts ought to be used, but in this case a course of planking should be fastened across the lower part of the struts to intercept the rebounding rain when driven by strong wind.

(g.) There should be barred doors to the untried and the debtors' rooms, to allow of the plank doors being left altogether open. The plank doors should have at their lower part gratings, to admit fresh air when the weather requires that these doors should be closed.

(h.) The ridge ventilators of the female prison should be altered, in the way described in the instance of the untried and debtors' rooms. A wind tower should be given to each room.

(i.) Barred

(i.) Barred doors should be added to the female prison, to be used by day or, when safe, at night. They should be outside the plank doors, so that when shut up at night a convict may not have anything to which to fasten a ligature for self-destruction. The plank doors should have ventilating orifices at their lower part.

(j.) The solitary cells should each have in its rear wall, on a level with the floor, an opening about a foot square, for a vessel for night use. This should have a self-closing sliding shutter to exclude foul air from the cell, and which the prisoner can draw up and open. In rear there should be a grated opening for the ventilation of the recess.

(k.) The cells for Europeans, although somewhat larger than is requisite for solitary prisoners, are too small for three men. To allow of one room holding three, two cells should be made into one by removing the partition between them. If the prisoners should be locked up singly, more cells should be built. It is very desirable that these dormitories should have their plinths raised to a height of three feet, and that there should be interposed in it a layer of asphalte. When carrying out this improvement the walls should be raised to 18 or 20 feet above the new floor.

(l.) The European prisoners at the time of the inspection were undergoing sentences for short periods, and the position of the barred door within the plank one, and of the barred window within their reach, was immaterial. In reconstructing or altering the cells, however, it is advisable that the barred door should be outside the plank one, and that the barred window should be at least eight or nine feet high in the wall, out of reach, with a sloping sill that would afford no hold to the prisoner; also that the wooden sleeping bench should be firmly fixed in the masonry. These precautions against suicide are requisite, where those under severe sentence are confined.

(m.) The European civil prisoners should have the floor of their bungalow increased in height. They should have an entrance quite distinct from that of the criminal prisoners.

(n.) The ridge ventilator of the hospital should be made continuous.

(o.) The prisoners should have a mattress on which to sleep. This has been introduced elsewhere by the Inspector General of Prisons.

R E P O R T
OF THE
SANITARY COMMISSION FOR
BOMBAY.
1866.

(Presented to Parliament by Her Majesty's Command.)

*Ordered, by The House of Commons, to be Printed,
3 December 1867.*

[*Price 1 s. 4 d.*]

MADRAS SANITARY COMMISSION.

R E P O R T

OF THE

SANITARY COMMISSIONER FOR MADRAS,

1 8 6 6 ;

WITH

A P P E N D I X

CONTAINING

MEDICAL RETURNS OF THE EUROPEAN AND NATIVE TROOPS,
AND PRISONERS IN GAOLS;
ALSO, THE MORTUARY RETURNS OF THE CIVIL POPULATION.

India Office, Military Department, }
28 November 1867. }

T. T. PEARS, Major General,
Military Secretary.

(PRESENTED TO PARLIAMENT BY HER MAJESTY'S COMMAND.)

Ordered, by The House of Commons, to be Printed,
2 December 1867.

INDEX.

Para.		Page	Para.		Page
1	Introduction - - - - -	1	73	Cannanore - - - - -	18
2	European Army - - - - -	2	73	Ditto - Barracks - - - - -	18
3	Native Army - - - - -	3	74	Ditto - Sickness and mortality - - - - -	18
4	Diagrams - - - - -	4	75	Ditto - Contrasted with other stations - - - - -	18
5	Gaols - - - - -	4	76	Ditto - Admissions - - - - -	18
6	Health of the civil population - - - - -	5	77	Ditto - Mortality - - - - -	19
7	Town of Madras - - - - -	6	78	Mulliapooram - - - - -	19
			78	Ditto - Sickness and mortality - - - - -	19
			79	Ditto - Contrasted with other stations - - - - -	19
	SICKNESS AND MORTALITY AMONGST TROOPS SERVING IN THE MADRAS PRESIDENCY.		80	Ditto - Admissions - - - - -	19
			81	Calicut - - - - -	19
8	Division of the statistical report - - - - -	7	81	Ditto - Sickness and mortality - - - - -	19
9	Annual stational returns - - - - -	7	82	Ditto - Contrasted with other stations - - - - -	19
10	Returns different from others - - - - -	7	83	Ditto - Admissions - - - - -	19
11	Comparison of sickness and mortality between past and pre- vious years.	8	84	Ditto - Mortality - - - - -	19
12	Causes of error in statistical returns - - - - -	8	85	CEDED DISTRICTS - - - - -	19
			86	Ditto - Sickness and mortality - - - - -	20
			87	Ditto - Sickness and mortality of previous years - - - - -	20
	SECTION I.—EUROPEAN TROOPS.		88	Ditto - Admissions - - - - -	20
13	Strength of Army from Adjutant General's returns - - - - -	9	89	Ditto - Mortality - - - - -	20
14	Increase of effectives - - - - -	9	90	Bellary - - - - -	20
15	Decrease of effectives - - - - -	9	90	Ditto - Barracks - - - - -	20
16	Decrease of unattached - - - - -	9	91	Ditto - Sickness and mortality - - - - -	21
17	Average strength from medical returns; sickness and mortality.	9	92	Ditto - Contrasted with other stations - - - - -	21
18	Sickness and mortality contrasted with previous years - - - - -	10	93	Ditto - High rate of ophthalmia - - - - -	21
19	Admissions into hospital - - - - -	10	94	Ditto - Mortality - - - - -	21
20	Daily sick and mortality - - - - -	10	95	Ditto - Humpi festival a cause of sickness - - - - -	21
21	Cholera - - - - -	10	96	Ramandroog - - - - -	21
22	Sickness and mortality contrasted with the other Presidencies - - - - -	10	96	Ditto - Sickness and mortality - - - - -	21
23	Admissions from special diseases - - - - -	11			
24	Deaths from special diseases - - - - -	11	97	NORTHERN DIVISION - - - - -	22
25	CENTRE DIVISION - - - - -	11	98	Ditto - Sickness and mortality of previous years - - - - -	22
26	Ditto - Sickness and mortality - - - - -	12	99	Ditto - Sickness and mortality - - - - -	22
27	Ditto - Sickness and mortality of previous years - - - - -	12	100	Vizagapatam - - - - -	22
28	Ditto - Admissions - - - - -	12	101	Ditto - Sickness and mortality - - - - -	22
29	Ditto - Mortality - - - - -	12	102	Ditto - Contrasted with other stations - - - - -	22
30	Fort Saint George - - - - -	12	103	Ditto - Admissions - - - - -	22
30	Ditto - Barracks - - - - -	12	104	Ditto - Mortality - - - - -	22
31	Ditto - Sickness and mortality - - - - -	12			
32	Ditto - Contrasted with other stations - - - - -	12	105	HYDERABAD SUBSIDIARY FORCE - - - - -	23
33	Ditto - High rate of venereal diseases - - - - -	13	105	Ditto - Sickness and mortality - - - - -	23
34	Ditto - Admissions from fever and diarrhoea, high - - - - -	13	106	Ditto - Sickness and mortality of previous years - - - - -	23
35	Ditto - Mortality - - - - -	13	107	Ditto - Increase of sickness - - - - -	23
36	Saint Thomas's Mount - - - - -	13	108	Ditto - Mortality - - - - -	23
36	Ditto - Barracks - - - - -	13	109	Secunderabad and Trimulgherry - - - - -	23
37	Ditto - Sickness and mortality - - - - -	13	110	Ditto - ditto - Sickness and mortality - - - - -	24
38	Ditto - Contrasted with other stations - - - - -	13	111	Ditto - ditto - Contrasted with other stations - - - - -	24
39	Ditto - Admissions - - - - -	13	112	Ditto - ditto - Admissions - - - - -	24
40	Ditto - Mortality - - - - -	13	113	Ditto - ditto - Special diseases - - - - -	24
41	Ditto - Sickness and mortality of previous years - - - - -	14	114	Ditto - ditto - Venereal diseases - - - - -	25
42	Poonamallee - - - - -	14	115	Ditto - ditto - Mortality - - - - -	25
43	Ditto - Barracks - - - - -	14	116	Secunderabad Barracks - - - - -	25
44	Ditto - Admissions - - - - -	14	117	Trimulgherry Barracks - - - - -	25
45	Ditto - Mortality - - - - -	14	118	Comparative salubrity of old and new cantonments - - - - -	26
46	Palaveram - - - - -	15	119	Comparative salubrity of different blocks of barracks - - - - -	27
47	Ditto - Sickness - - - - -	15			
48	Ditto - Mortality - - - - -	15	120	NAGPORE DIVISION - - - - -	28
49	SOUTHERN DIVISION - - - - -	15	120	Ditto - Sickness and mortality - - - - -	28
49	Ditto - Sickness and mortality - - - - -	15	121	Ditto - Sickness and mortality of previous years - - - - -	28
50	Ditto - Sickness and mortality of previous years - - - - -	15	122	Ditto - Admissions - - - - -	28
51	Ditto - Causes of increased sickness - - - - -	15	123	Ditto - Mortality - - - - -	28
52	Ditto - Admissions - - - - -	15	124	Kamptee - - - - -	28
53	Ditto - Mortality - - - - -	16	124	Ditto - Sickness and mortality - - - - -	28
54	Trichinopoly - - - - -	16	125	Ditto - Contrasted with other stations - - - - -	28
54	Ditto - Sickness and mortality - - - - -	16	126	Ditto - Admissions - - - - -	29
55	Ditto - Contrasted with other stations - - - - -	16	127	Ditto - Mortality - - - - -	29
56	Ditto - Admissions - - - - -	16	128	Seetabuldee - - - - -	29
57	Ditto - Mortality - - - - -	16	128	Ditto - Sickness and mortality - - - - -	29
58	Wellington - - - - -	16	129	Ditto - Contrasted with other stations - - - - -	29
58	Ditto - Sickness and mortality - - - - -	16	130	Ditto - Admissions - - - - -	29
59	Ditto - Admissions - - - - -	16	131	Ditto - Mortality - - - - -	29
60	Ditto - Mortality - - - - -	16	132	Chindwarrah - - - - -	29
61	MYSORE Division - - - - -	16	132	Ditto - Sickness and mortality - - - - -	29
62	Ditto - Sickness and mortality - - - - -	16	133	Ditto - Admissions - - - - -	29
63	Ditto - Sickness and mortality of previous years - - - - -	17	134	Ditto - Mortality - - - - -	29
64	Ditto - Increase of sickness - - - - -	17			
65	Ditto - Admissions - - - - -	17	135	PEGU DIVISION - - - - -	29
66	Ditto - Low rate of venereal diseases - - - - -	17	135	Ditto - Sickness and mortality - - - - -	30
67	Ditto - Mortality - - - - -	17	136	Ditto - Sickness and mortality of previous years - - - - -	30
68	Bangalore - - - - -	17	137	Ditto - Admissions - - - - -	30
68	Ditto - Barracks - - - - -	17	138	Ditto - Mortality - - - - -	30
69	Ditto - Sickness and mortality - - - - -	18	139	Rangoon - - - - -	30
70	Ditto - Contrasted with other stations - - - - -	18	139	Ditto - Sickness and mortality - - - - -	30
71	Ditto - Admissions - - - - -	18	140	Ditto - Contrasted with other stations - - - - -	31
72	Ditto - Mortality - - - - -	18	141	Ditto - Admissions - - - - -	31
			142	Ditto - High rate of venereal disease - - - - -	31
			143	Ditto - Mortality - - - - -	31

Para.		Page.	Para.		Page.
144	Thayetmyoo - - - - -	31	229	Cooling of barracks - - - - -	57
144	Ditto - Sickness and mortality - - - - -	31	230	Principles of hospital construction - - - - -	57
145	Ditto - Contrasted with other stations - - - - -	31	231	New military hospital, Bangalore - - - - -	64
146	Ditto - Mortality out of hospital - - - - -	31	232	Ditto - Madras - - - - -	64
147	Ditto - Admissions - - - - -	32	233	Ditto - Saint Thomas's Mount - - - - -	65
148	Ditto - Mortality - - - - -	32			
149	Tonghoo - - - - -	32			
149	Ditto - Sickness and mortality - - - - -	32	234	SECTION II.—NATIVE TROOPS.	
150	Ditto - Contrasted with other stations - - - - -	32	235	Strength of native army, Adjutant General's Return - - - - -	65
151	Ditto - Admissions - - - - -	32	236	Increase of army - - - - -	65
152	Ditto - Mortality - - - - -	32	237	Decrease of army - - - - -	65
153	Port Blair - - - - -	32	237	Strength according to medical returns - - - - -	65
153	Ditto - Sickness and mortality - - - - -	32	238	Sickness and mortality - - - - -	65
154	Ditto - Contrasted with other stations - - - - -	32	239	Present statistics of native army faulty - - - - -	66
155	Ditto - Admissions - - - - -	33	240	Troops serving in the army division alone considered - - - - -	66
156	Ditto - Mortality - - - - -	33	241	Sickness and mortality - - - - -	66
157	STRAITS OF MALACCA - - - - -	33	242	Sickness and mortality of previous years - - - - -	66
157	Singapore - - - - -	33	243	Deaths in the native army - - - - -	67
157	Ditto - Sickness and mortality - - - - -	33	244	Admissions from special diseases - - - - -	67
158	Ditto - Contrasted with other stations - - - - -	33	245	Admissions from cholera - - - - -	67
159	Ditto - Admissions - - - - -	33	246	Deaths from special diseases - - - - -	68
160	Ditto - Mortality - - - - -	33	247	Sickness and mortality compared with other presidencies - - - - -	68
161	Penang - - - - -	33	248	CENTRE DIVISION - - - - -	68
161	Ditto - Sickness and mortality - - - - -	33	249	Ditto - Sickness and mortality - - - - -	69
162	Ditto - Contrasted with other stations - - - - -	33	250	Ditto - Contrasted with former years - - - - -	69
163	Ditto - Admissions - - - - -	33	251	Ditto - Admissions - - - - -	69
164	Ditto - Mortality - - - - -	33	252	Ditto - Deaths - - - - -	69
165	Sickness and mortality in each division contrasted - - - - -	34	253	Fort St. George - - - - -	69
166	Ditto - From special diseases in each division - - - - -	35	253	Ditto - Sickness and mortality - - - - -	69
167	Miasmatic diseases - - - - -	35	254	Ditto - Contrasted with other stations - - - - -	69
168	Ditto - Contrasted with previous years - - - - -	35	255	Ditto - Admissions - - - - -	70
169	Ditto - Comparative prevalence of, at stations - - - - -	35	256	Ditto - Deaths - - - - -	70
170	Small-pox, prevalence of, during previous years - - - - -	36	257	Vellore - - - - -	70
171	Ditto - Contrasted with other presidencies - - - - -	36	257	Ditto - Sickness and mortality - - - - -	70
172	Dysentery - - - - -	36	258	Ditto - Contrasted with other stations - - - - -	70
173	Ditto - Contrasted with previous years - - - - -	36	259	Ditto - Admissions - - - - -	70
174	Ditto - Comparative prevalence of, at stations - - - - -	36	260	Ditto - Deaths - - - - -	70
175	Diarrhoea - - - - -	37	261	Saint Thomas's Mount - - - - -	70
176	Ditto - Prevalence of during previous years - - - - -	37	261	Ditto - Sickness and mortality - - - - -	70
177	Ditto - Comparative prevalence of, at stations - - - - -	37	262	Palaveram - - - - -	70
178	Bowel complaints, contrasted with other presidencies - - - - -	37	262	Ditto - Sickness and mortality - - - - -	70
179	Cholera - - - - -	37	263	SOUTHERN DIVISION - - - - -	70
180	Ditto - Contrasted with previous years - - - - -	38	264	Ditto - Sickness and mortality - - - - -	70
181	Ditto - Decrease of during 1866 - - - - -	38	265	Ditto - Sickness and mortality of previous years - - - - -	71
182	Ditto - Comparative prevalence of, in different divisions of the army for 1866 and previous years.	38	266	Ditto - Admissions - - - - -	71
183	Ditto - Comparative prevalence of, in different stations - - - - -	38	267	Ditto - Deaths - - - - -	71
184	Ditto - Prevalence of, contrasted with other presidencies - - - - -	39	268	Trichinopoly - - - - -	71
185	Fevers - - - - -	39	268	Ditto - Sickness and mortality - - - - -	71
186	Ditto - Contrasted with previous years - - - - -	39	269	Ditto - Contrasted with other stations - - - - -	71
187	Ditto - Contrasted with Bengal - - - - -	39	270	Ditto - Admissions from Cholera - - - - -	71
188	Ditto - Comparative prevalence of, at stations - - - - -	39	271	Quilon - - - - -	72
189	Hepatic diseases - - - - -	40	271	Ditto - Sickness and mortality - - - - -	72
190	Ditto - Contrasted with previous years - - - - -	40	272	Ditto - Contrasted with other stations - - - - -	72
191	Ditto - Comparative prevalence of, at stations - - - - -	40	273	Ditto - Admissions - - - - -	72
192	Ditto - Prevalence of, contrasted with other presidencies - - - - -	40	274	Ditto - Deaths - - - - -	72
193	Venereal diseases - - - - -	40	275	Palamcottah - - - - -	72
194	Ditto - Contrasted with previous years - - - - -	41	275	Ditto - Sickness and mortality - - - - -	72
195	Ditto - Contrasted with other presidencies - - - - -	41	276	Ditto - Contrasted with other stations - - - - -	72
196	Ditto - Comparative prevalence of, at stations - - - - -	41	277	Ditto - Admissions - - - - -	72
197	Ditto - Decrease of, at Bangalore - - - - -	41	278	Ditto - Deaths - - - - -	72
198	Ditto - Great prevalence of, at Fort St. George and Rangoon.	42	279	Trivandrum - - - - -	72
199	Ditto - Admissions into Lock Hospitals - - - - -	42	279	Ditto - Sickness and mortality - - - - -	72
200	Invaliding during 1866 - - - - -	42	280	Trichoor - - - - -	72
201	Ditto - Causes of - - - - -	42	280	Ditto - Sickness and Mortality - - - - -	72
202	Ditto - Contrasted with previous years - - - - -	43	281	MYSORE DIVISION - - - - -	72
203	Ditto - Contrasted with other presidencies - - - - -	43	282	Ditto - Sickness and mortality - - - - -	73
204	Relation of age to mortality - - - - -	43	283	Ditto - Sickness and mortality of previous years - - - - -	73
205	Health of women belonging to British regiments - - - - -	44	284	Ditto - Admissions - - - - -	73
206	Admissions amongst women - - - - -	44	285	Ditto - Deaths - - - - -	73
207	Admissions of women from special diseases - - - - -	44	286	Bangalore - - - - -	73
208	Deaths from special diseases amongst women - - - - -	44	286	Ditto - Sickness and mortality - - - - -	73
209	Comparative sickness and mortality amongst women at stations.	45	287	Ditto - Contrasted with previous years - - - - -	73
210	Health of children of Her Majesty's British troops - - - - -	45	288	Ditto - Admissions - - - - -	73
211	Admission of children from special diseases - - - - -	46	289	Ditto - Deaths - - - - -	74
212	Deaths from special diseases - - - - -	46	290	Cannanore - - - - -	74
213	Comparative sickness and mortality at stations - - - - -	46	290	Ditto - Sickness and mortality - - - - -	74
214	Sickness amongst temperate and intemperate soldiers - - - - -	46	291	Ditto - Contrasted with other stations - - - - -	74
215	Health of troops marching - - - - -	47	292	Ditto - Admissions - - - - -	74
216	Rules to be observed in outbreaks of cholera - - - - -	47	293	Ditto - Deaths - - - - -	74
217	Rules for the prevention of venereal diseases - - - - -	50	294	Mangalore - - - - -	74
218	Selection of sites for barracks - - - - -	51	294	Ditto - Sickness and mortality - - - - -	74
219	Cholera encamping grounds - - - - -	51	295	Ditto - Contrasted with other stations - - - - -	74
220	Sanitaria - - - - -	51	296	Ditto - Admissions - - - - -	74
221	New pattern tents - - - - -	52	297	Ditto - Deaths - - - - -	74
222	Plans for barracks - - - - -	52	298	Mercara - - - - -	74
223	Quarters for warrant officers (Madras) - - - - -	52	298	Ditto - Sickness and mortality - - - - -	74
224	Water supply to troops - - - - -	53	299	Ditto - Contrasted with other stations - - - - -	74
225	Rations for troops - - - - -	55	300	Ditto - Admissions - - - - -	74
226	Cooking ranges - - - - -	56	301	Ditto - Deaths - - - - -	75
227	Bedding for troops - - - - -	56	302	Mysore - - - - -	75
228	Lighting of barracks - - - - -	56	302	Ditto - Prevalence of malarious diseases - - - - -	75
			303	Ditto - Sickness and mortality - - - - -	75
			304	Ditto - Admissions - - - - -	75
			305	Ditto - Deaths - - - - -	75

Para.		Page	Para.		Page
306	Hurryhur - - - - -	75	371	PEGU DIVISION - - - - -	86
306	Ditto - Sickness and mortality - - - - -	75	372	Ditto - Sickness and mortality - - - - -	86
307	Wynaad - - - - -	75	373	Ditto - Sickness and mortality of previous years - - - - -	86
307	Ditto - Sickness and mortality - - - - -	75	374	Ditto - Remarkable absence of cholera - - - - -	86
			375	Ditto - Prevalence of bowel complaints - - - - -	87
308	CEDED DISTRICTS - - - - -	76	376	Ditto - Deaths - - - - -	87
308	Ditto - Sickness and mortality - - - - -	76	377	Rangoon - - - - -	87
309	Ditto - Sickness and mortality of previous years - - - - -	76	377	Ditto - Sickness and mortality - - - - -	87
310	Ditto - Admissions - - - - -	76	378	Ditto - Contrasted with other stations - - - - -	87
311	Ditto - Deaths - - - - -	77	379	Ditto - Causes of high rate of sickness - - - - -	87
312	Bellary - - - - -	77	380	Ditto - Deaths - - - - -	87
312	Ditto - Sickness and mortality - - - - -	77	381	Thayetmyoo - - - - -	87
313	Ditto - Contrasted with other stations - - - - -	77	381	Ditto - Sickness and mortality - - - - -	87
314	Ditto - Admissions - - - - -	77	382	Ditto - Contrasted with other stations - - - - -	87
315	Ditto - Deaths - - - - -	77	383	Ditto - Admissions - - - - -	87
316	Cuddapah - - - - -	77	384	Ditto - Deaths - - - - -	87
316	Ditto - Sickness and mortality - - - - -	77	385	Moulmein - - - - -	88
317	Ditto - Contrasted with other stations - - - - -	77	385	Ditto - Sickness and mortality - - - - -	88
318	Ditto - Admissions - - - - -	77	386	Ditto - Contrasted with other stations - - - - -	88
319	Ditto - Deaths - - - - -	77	387	Ditto - Admissions - - - - -	88
320	Kurnool - - - - -	77	388	Ditto - Deaths - - - - -	88
320	Ditto - Sickness and mortality - - - - -	77	389	Tonghoo - - - - -	88
321	Ditto - Contrasted with other stations - - - - -	77	389	Ditto - Sickness and mortality - - - - -	88
322	Ditto - Admissions - - - - -	78	390	Ditto - Contrasted with other stations - - - - -	88
323	Ditto - Frequent outbreaks of cholera in removal of station proposed.	78	391	Shoagheen - - - - -	88
			391	Ditto - Sickness and mortality - - - - -	88
324	NORTHERN DIVISION - - - - -	79	392	STRAITS OF MALACCA - - - - -	88
325	Ditto - Sickness and mortality - - - - -	79	393	Singapore - - - - -	89
326	Ditto - Contrasted with previous years - - - - -	80	393	Ditto - Sickness and mortality - - - - -	89
327	Ditto - Admissions - - - - -	80	394	Ditto - Contrasted with other stations - - - - -	89
328	Ditto - Deaths - - - - -	80	395	Ditto - Admissions - - - - -	89
329	Waltair (Vizagapatam) - - - - -	80	396	Penang - - - - -	89
329	Ditto - Sickness and mortality - - - - -	80	396	Ditto - Sickness and mortality - - - - -	89
330	Ditto - Contrasted with other stations - - - - -	80	397	Ditto - Contrasted with other stations - - - - -	89
331	Ditto - Admissions - - - - -	80	398	Malacca - - - - -	89
332	Ditto - Deaths - - - - -	80	398	Ditto - Sickness and mortality - - - - -	89
333	Berhampore - - - - -	81	399	Labuan - - - - -	89
333	Ditto - Sickness and mortality - - - - -	81	399	Ditto - Sickness and mortality - - - - -	89
334	Ditto - Contrasted with other stations - - - - -	81	400	Port Blair - - - - -	89
335	Ditto - Admissions - - - - -	81	400	Ditto - Sickness and mortality - - - - -	89
336	Ditto - Deaths - - - - -	81			
337	Samukottah - - - - -	81	401	Sickness and mortality of divisions comparatively arranged - - - - -	90
337	Ditto - Sickness and mortality - - - - -	81	402	Sickness and mortality from special diseases - - - - -	91
338	Ditto - Contrasted with other stations - - - - -	81	403	Ditto - From miasmatic diseases - - - - -	91
339	Ditto - Admissions - - - - -	81	404	Ditto - Contrasted with former years - - - - -	91
340	Ditto - Deaths - - - - -	81	405	Ditto - Comparative prevalence of, at stations - - - - -	91
341	Vizianagrum - - - - -	81	406	Veneral diseases - - - - -	92
341	Ditto - Sickness and mortality - - - - -	81	407	Ditto - Prevalence of, during former years - - - - -	92
342	Ditto - Contrasted with other stations - - - - -	81	408	Ditto - Contrasted with other presidencies - - - - -	92
343	Ditto - Deaths - - - - -	81	409	Small-pox, sickness and mortality from - - - - -	92
344	Cuttack - - - - -	81	410	Ditto - Prevalence of, in former years - - - - -	92
344	Ditto - Sickness and mortality - - - - -	81	411	Ditto - Contrasted with other presidencies - - - - -	92
345	Sumbulpore - - - - -	82	412	Dysentery, sickness and mortality from - - - - -	92
345	Ditto - Sickness and mortality - - - - -	82	413	Ditto - Contrasted with previous years - - - - -	93
346	Ditto - Prevalence of miasmatic diseases - - - - -	82	414	Ditto - Comparative prevalence of, at stations - - - - -	93
			415	Diarrhoea, sickness and mortality from - - - - -	93
347	HYDERABAD SUBSIDIARY FORCE - - - - -	82	416	Ditto - Sickness and mortality from, in former years - - - - -	93
347	Ditto - Sickness and mortality - - - - -	82	417	Ditto - Contrasted with other presidencies - - - - -	94
348	Ditto - Sickness and mortality of previous years - - - - -	82	418	Ditto - Comparative prevalence of, at stations - - - - -	94
349	Secundrabad - - - - -	83	419	Cholera, sickness and mortality from - - - - -	94
349	Ditto - Sickness and mortality - - - - -	83	420	Ditto - Sickness and mortality from, in former years - - - - -	94
350	Ditto - Contrasted with other stations - - - - -	83	421	Ditto - Contrasted with other presidencies - - - - -	94
351	Ditto - Admissions - - - - -	83	422	Ditto - Comparative prevalence of, in divisions - - - - -	95
352	Ditto - Deaths - - - - -	83	423	Ditto - Peculiarities of, in ceded districts - - - - -	95
			424	Ditto - Comparative prevalence of, at stations - - - - -	95
353	NAGPORE FORCE - - - - -	84	425	Fevers, sickness and mortality from - - - - -	96
354	Ditto - Sickness and mortality - - - - -	84	426	Ditto - Sickness and mortality from, in former years - - - - -	96
355	Ditto - Sickness and mortality of previous years - - - - -	84	427	Ditto - Contrasted with other presidencies - - - - -	96
356	Ditto - Admissions - - - - -	84	428	Ditto - Comparative prevalence of, at stations - - - - -	96
357	Ditto - Deaths - - - - -	84	429	Hepatic diseases, sickness and mortality from - - - - -	97
358	Kamptee - - - - -	84	430	Ditto - Sickness and mortality from, in previous years - - - - -	97
358	Ditto - Sickness and mortality - - - - -	84	431	Troops marching - - - - -	97
359	Ditto - Contrasted with other stations - - - - -	84	432	Cart funds for native corps - - - - -	97
360	Ditto - Admissions - - - - -	85	433	Native infantry lines, Madras - - - - -	98
361	Ditto - Deaths - - - - -	85	434	Principles of hospital construction - - - - -	99
362	Raipore - - - - -	85	435	Tents for hospital use in native corps - - - - -	101
362	Ditto - Sickness and mortality - - - - -	85	436	Conservancy of native regimental lines - - - - -	101
363	Ditto - Admissions - - - - -	85	437	Dry earth system, Vepery lines - - - - -	102
364	Ditto - Deaths - - - - -	85	438	Diagrams - - - - -	102
365	Seetabuldee - - - - -	85			
365	Ditto - Sickness and mortality - - - - -	85			
366	Hoosingabad - - - - -	85			
366	Ditto - Sickness and mortality - - - - -	85			
367	Chandah - - - - -	85			
367	Ditto - Sickness and mortality - - - - -	85			
368	Seroncha - - - - -	85			
368	Ditto - Sickness and mortality - - - - -	85			
369	Moottoor - - - - -	86			
369	Ditto - Sickness and mortality - - - - -	86			
370	Chindwarrah - - - - -	86			
370	Ditto - Sickness and mortality - - - - -	86			

SECTION III.—GAOL POPULATION.

439	Gaol statistics - - - - -	103
440	Average number of prisoners in gaol - - - - -	103
441	Sickness - - - - -	103
442	Mortality - - - - -	103
443	Ditto - Contrasted with former years - - - - -	103
444	Ditto - Contrasted with other presidencies - - - - -	104
445	Causes of high rate of gaol mortality in Madras - - - - -	104
446	Comparative sickness and mortality in gaols - - - - -	104
447	Sickness in the Berhampore gaol - - - - -	105
448	Sickness in the Tellicherry gaol - - - - -	105
449	Comparative sickness of gaols whose average strength is over 300. - - - - -	106

Para.		Page	Para.		Page
450	Comparative sickness of gaol whose average strength is over 200.	106	493	Deaths by murder - - - - -	115
451	Comparative sickness of gaol whose average strength is under 200.	107	494	Ganjam district - - - - -	115
452	Health of gaols, contrasted with previous years - - -	107	495	Ditto - zemindary - - - - -	115
453	Cholera, sickness and mortality from - - - - -	107	496	Vizagapatam district - - - - -	115
454	Ditto - Prevalence of, in former years - - - - -	107	497	Godavery district - - - - -	115
455	Ditto - Comparative prevalence of, in gaols - - -	108	498	Ditto - zemindary - - - - -	115
456	Ditto - Outbreak of, in Vellore gaol - - - - -	108	499	Kistna district - - - - -	115
457	Ditto - Contrasted between Madras gaols, and those of other presidencies.	108	500	Nellore district - - - - -	115
458	Small-pox, sickness and mortality from - - - - -	108	501	Ditto - zemindary - - - - -	115
459	Ditto - Prevalence of, in former years - - - - -	109	502	Cuddapah district - - - - -	115
460	Ditto - Contrasted with other presidencies - - -	109	503	Bellary district - - - - -	115
461	Ditto - Comparative prevalence of, in gaols - - -	109	504	Kurnool district - - - - -	116
462	Fevers, sickness and mortality from - - - - -	109	505	Madras district - - - - -	116
463	Ditto - Prevalence of, in former years - - - - -	109	506	North Arcot district - - - - -	116
464	Ditto - Contrasted with other presidencies - - -	109	507	South Arcot district - - - - -	116
465	Ditto - Comparative prevalence of, in gaols - - -	109	508	Tanjore district - - - - -	116
466	Dysentery, sickness and mortality from - - - - -	110	509	Trichinopoly district - - - - -	116
467	Ditto - Prevalence of, in former years - - - - -	110	510	Madura district - - - - -	116
468	Ditto - Contrasted with gaols of other presidencies	110	511	Ramnad zemindary (Madura district)	116
469	Ditto - Comparative prevalence of, in gaols - - -	110	512	Tinnevely district - - - - -	116
470	Diarrhoea, sickness and mortality from - - - - -	110	513	Coimbatore district - - - - -	116
471	Ditto - Prevalence of, in former years - - - - -	110	514	Salem district - - - - -	117
472	Ditto - Contrasted with other presidencies - - -	111	515	South Canara district - - - - -	117
473	Ditto - Comparative prevalence of, in gaols - - -	111	516	Malabar district - - - - -	117
474	Phthisis, sickness and mortality from - - - - -	111	517	Deaths in the town of Madras - - - - -	117
475	Ditto - Prevalence of, in former years - - - - -	111	518	Deaths from cholera in Madras - - - - -	119
476	Ditto - Contrasted with other presidencies - - -	111	519	Sale of unwholesome articles of food - - - - -	119
477	Ditto - Comparative prevalence of, in gaols - - -	111	520	Medical aid in small towns and villages - - - - -	119
478	Sickness and mortality in Bangalore Central Gaol - -	112	SECTION V.—MISCELLANEOUS.		
479	Medical returns of police - - - - -	112			
480	Madras town police - - - - -	113			
481	Selection of sites for gaols - - - - -	113			
482	Overcrowding of district subsidiary gaols - - - - -	113			
483	Special inspections of gaols - - - - -	113			
SECTION IV.—GENERAL POPULATION.					
484	Mortuary statistics, civil population - - - - -	114	521	Reorganization of the Sanitary Commission - - - -	125
485	Total deaths - - - - -	114	522	Public Health service - - - - -	125
486	Rate of mortality contrasted with other countries - -	114	523	Cholera Congress at Constantinople - - - - -	134
487	Cholera - - - - -	114	524	Emigration Dépôts - - - - -	146
488	Small-pox - - - - -	114	525	Meteorological observations - - - - -	147
489	Fevers - - - - -	115	526	Drainage of Madras - - - - -	149
490	Deaths from age - - - - -	115	527	Disinfection of clothing, &c. - - - - -	152
491	Ditto - from accident - - - - -	115	528	Special inspection, reports of stations, &c. - - - -	154
492	Ditto - by suicide - - - - -	115	529	Water supply to troops in garrison at Fort St. George	154
			530	Water supply for Madras - - - - -	155
			531	Lunatic Asylum, Madras - - - - -	155
			532	Fouling of well water in connection with the production of Guinea worm.	156
			533	Lock hospitals - - - - -	156
			534	Native festivals, conjeeveram, &c. &c. - - - - -	159
			535	General hospital (Madras) - - - - -	159
			536	Special employment of Sanitary Commissioner - - -	159
			537	Dry earth conservancy - - - - -	160

MAP OF THE MADRAS PRESIDENCY

Showing the
STATIONS OCCUPIED BY EUROPEAN
and
NATIVE TROOPS

Reference

- Stations occupied by European troops only —
Stations occupied by Native troops only —
Stations occupied by Native and European troops —



R E P O R T
OF THE
SANITARY COMMISSIONER FOR MADRAS,
1866.

(No. 80 A.)

From the Honourable *R. S. Ellis*, C.B., Sanitary Commissioner for Madras, to
Major General *H. Marshall*, Secretary to Government, Military Department,
Fort St. George.

Office of Sanitary Commissioner, Madras,
1 May 1867.

Sir,

I HAVE the honour to submit the Annual Sanitary Report for 1866.
The Report is divided into the following sections :—

Section I. Sanitary condition of the European army.

Section II. Sanitary condition of the Native army.

Section III. Sanitary condition of the prisoners confined in gaols in
this Presidency.

Section IV. Health of the civil population.

Section V. Miscellaneous; containing details as to inspections of sta-
tions, and measures connected with the sanitary administration of the Presi-
dency during the year under report.

In this Report, especially in the 1st and 2nd sections which relate to the health of the army, European and Native, there has been for the first time collected much statistical information, which I trust may prove useful both as affording a fair comparison between the sanitary condition of the army during a period of six years, and as affording a surer basis for statistical examination for future years.

I have endeavoured in these sections to lay before the Government as accurate a picture of the sanitary condition of the whole army as possible. For this purpose I have given separately the statistics of the European and Native armies, and for each of these every division and every station has been separately noticed, as well as the sickness and mortality of the troops, European and Native, in cantonments and on the line of march.

This method increases the length of this Report, but I trust that this disadvantage is more than counterbalanced by affording to those responsible for the health of the army the means of tracing the influence of localities on the health of the troops, European and Native, and of ascertaining the greater or less prevalence of diseases which can be controlled by sanitary measures, and thus to direct special attention to stations where immediate remedial action, involving expenditure of public works conducive to the health of troops, is most required.

I observe that it has been suggested by the Military Department in Bengal, "whether it would not be expedient to make a regimental, rather than a stational or provincial medical history, the basis of investigation, taking as units in the inquiry batteries, detached wings and regiments. Arguing thus by induction, it appears probable that a closer knowledge of the real conditions of healthiness will be acquired, together with enlarged data, from which in time a knowledge of the actual and innate climatic influences of places, and the sanitary effects of habits may be deduced with a fairer prospect of certainty than seems otherwise attainable." With all deference for the opinion above expressed, and acknowledging the value of regimental medical history, I submit that for the purpose of thoroughly studying the effects of climate and of locality upon the health of troops, the record for a series of years of the statistics of stations, and of effectives located at these places, is essentially necessary.

The admissions into hospital and the death-rate among effectives at each station, for a series of years, will afford a safer criterion of the comparative healthiness or otherwise of stations, than purely regimental medical history, which would be influenced by causes, which are independent of stations and climate.

European army.

2. The average strength of the European troops serving in the Presidency and at Port Blair, Singapore and Penang, during the year 1866, as given by the army medical returns, was 11,498; and I have preferred to deal with the strength of the army given in these Returns, in describing the general sanitary condition of the army at the several stations, rather than with the strength given in the Returns of the Adjutant General, according to which the army was returned as 14,284 on the 1st January 1866, and 11,345 on the 1st January 1867, showing a decrease during the year of 3,336 men.

The strength of the army given by the Adjutant General is the actual number of troops in the Presidency on the 1st January 1866 and on the 1st January 1867.

The strength given in the medical returns represents the actual number during each week of the year, and it is obvious that a more correct average yearly strength is obtained from the medical returns than from those of the Adjutant General.

To give an example, a regiment which has served in the Presidency during 10 months, say from February to November 1866, and which left India in November, would be omitted from the Adjutant General's Returns for 1866, but would be shown in the medical returns for the whole portion of the year during which it remained in the Presidency.

Of the average strength 11,498 shown by the medical returns, 16,795 admissions into hospital are recorded. The average number of daily sick was 778·6 or 67·7 per mille, the mortality was 250 or 21 per mille. The number of men invalided for discharge from the service was 645 or 56·68 per mille of strength.

By reference to the details contained in the subsequent portion of this Report, Section I., it will be seen that if 1866 be compared with the previous six years, the admissions into hospital have been 1456·5 per mille, as compared with the average 1425·1. The daily sick-rate has been 68·1 as compared with the average 63·6, while the death-rate has been 21·9 as compared with the average 17·9.

The past year, 1866, shows a slight retrogression in the sanitary condition of the European army. But it must be remembered that the year under review has been peculiarly unhealthy, owing to the failure of the rains and to atmospheric disturbances which have affected injuriously the public health of the whole Presidency. Cholera and epidemic fever, aggravated by distress, amounting in some parts of the country to famine, have caused great loss of life among the Natives; and although the European army has not suffered from epidemic disease, the causes which have injuriously affected the native population have, though in a less degree, unfavourably influenced the sanitary condition of the European soldiers. The rates of sickness and mortality of the army serving in the Madras Presidency during six years from 1860 to 1865, both inclusive, contrast favourably with those of the armies serving in Bengal and Bombay. The Return for 1866, for Bengal and Bombay, is not available.

PRESIDENCY.	Ratio per Thousand of Strength.		
	Admissions.	Daily Sick.	Deaths.
Madras - - - - -	1425·1	63·6	17·9
Bengal - - - - -	1856	72	20·9
Bombay - - - - -	1708·8	* 61·26	23·4

As regards mere admissions into hospital, during the year under report the disease which furnishes the largest number is venereal, of which there were 2,624 cases. Next in numerical amount are fevers of an intermittent type, continued fever, diarrhoea, dysentery and hepatic affections. There have been, during the year, only 45 admissions from cholera.

In

* An average of only three years of daily sick is available.

In the above remarks I have briefly shown the rate of mortality and of sickness in the European army for the year under report. I would, however, call special attention to the details given in Section I. regarding invaliding. The total number invalided during 1866 has been 645, or 56·68 per mille, while the average during the past six years has been 540, or 44·3 per mille.

This rate of invaliding exhibits an unfavourable contrast with the rates of invaliding from the Presidencies of Bengal and Bombay, which are respectively as follows. During the last seven years the rate of invaliding from Bengal has been 35·29 per mille, while during 1865, the only year for which returns are available, invaliding from Bombay has been 30·7 per mille.

The greatest mortality has been from dysentery, 45, hepatic affections, 34, cholera, 28, phthisis, 20, and insolation or death from high temperature, 13.

The largest portion of the high death-rate at Secunderabad, the station at which there has been the greatest mortality, namely, 33·6 per mille, was contributed by the 18th Hussars, who are living in what are known as the old European Infantry Barracks. The ill-chosen site, and the objectionable neighbourhood of these barracks, have frequently been reported upon as the cause of the high rate of sickness and mortality of the occupants, as compared with European troops in other barracks at the same station. It was proposed that the whole European force shall be placed in the barracks at Trimulgherry, and this intention has been carried into effect as regards all the European troops, except the cavalry regiment and two batteries of artillery. The objectionable barracks occupied by the cavalry will be abandoned on the completion of the barrack buildings at Trimulgherry.

Another station, St. Thomas' Mount, has a death-rate during the year under report of 26·4, and for the previous five years of 26·2.

This death-rate is the same during a period of nine years from 1829 to 1838, so that it will be seen that, after an interval of nearly 40 years, the death-rate at this station has been persistently high.

This is very remarkable, for St. Thomas' Mount, within eight miles of Fort St. George, presents no apparent reason for unhealthiness. But a cause for a high sick and death-rate has been present during all these years; namely, ill-constructed barracks and overcrowding in these buildings.

Suggestions for the improvement of the existing barracks at this station, and the necessity for enlarged accommodation were made to Government, by the late Dr. Macpherson when officiating as President of the Sanitary Commission, and these are in course of being carried out. It may confidently be expected that when the new buildings are completed, and the troops at St. Thomas' Mount are placed in proper sanitary conditions, the high sick and death-rate will at once and permanently be reduced.

3. It will be remarked that in Section II. the same system of minute statistical returns and analysis has been observed for the native army. Native army.

The strength of the native army for the year 1866, according to the Adjutant General's Return, was 32,121, but I have preferred in making the analysis of the health statistics of the native army to confine my remarks to the medical returns, which exclude men who have died on leave at their homes, and deal only with men present during the year with their regiments, and who have been admitted to the regimental hospitals. The statistics derived from the medical returns relate to a force of 27,217 men stationed in the eight military divisions of the Madras Presidency. This excludes Madras Native troops serving at Saugor and Jubbulpore, provinces under the Government of India, and not, in sanitary matters, under the control of the Madras Government.

Of this force of 27,217 men, serving in the eight divisions marginally noted, 22,135 have, during the year, been admitted into hospital; the daily average of sick has been 869·5, and the total number of deaths 375. The death-rate, made up of men who have died in hospital and out of hospital with their regiments, is 13·7 per mille.

If on the other hand we take the strength given in the Adjutant General's Return for the whole native army, namely 32,121, which includes men absent on furlough, and deaths which have occurred among native soldiers on leave, we find a death-rate of 16·3 per mille for the year 1866.

A comparison of the returns of 1866, with those of six previous years, shows that

Centre Division.
Southern "
Mysore "
Ceded Districts.
Northern Division.

Hyderabad Sub-
sidiary Force.
Nagpore Force.
Pegu Division.

that the sick-rate is somewhat above the average, while the rate of mortality in hospital has been in excess of the average, but slightly below that of 1865. An examination of the returns which form part of this Report, Section II., shows cholera to have caused the greatest number of deaths; and the following diseases have, after cholera, proved most fatal to life in the native army, namely, intermittent fever, dysentery, diarrhoea, atrophy and anæmia, and diseases of the respiratory organs.

On comparing the health of the Madras native army with that of Bengal and Bombay, we find that the total admissions into hospital, the daily sick, and the death-rate are higher in Bengal than in Madras. The admission-rate in Bombay is higher than in Madras, but the death-rate is more favourable than those of Bengal and Madras.

When it is remembered that the year 1866 has been attended by a failure of rains and by a marked increase of sickness and mortality among the civil population, owing to cholera and fever in an epidemic form, it is a subject of congratulation that the health of the native army has comparatively been so little affected, and that there has been so small an increase of the average sickness and mortality.

The stations which call for most remark, as regards unhealthiness, are Raipore, Kamptee, Sumbulpore, Secunderabad, Mysore, and Rangoon. In all these places the native troops have suffered severely from intermittent and continued fever.

Mysore has on this account ceased to be occupied by native troops, and at Sumbulpore the site of the lines has been changed, which may tend to a diminution of the severe type of fever from which the native troops have suffered. The prevalence of fever at Kurnool has been exceptional, as in ordinary years it is not an unhealthy station for native troops. The position of the regimental lines at Secunderabad, in close proximity to marshy land in the neighbourhood of wet cultivation, may in a measure account for the prevalence of fever; but at this station, as at Kamptee and Raipore, the native regiments, recruited principally from the eastern coast districts, will always suffer from a climate liable to great variations of temperature.

The native regiment at Rangoon has suffered severely from bowel-complaints, which are attributed to the damp climate, which is unfavourable to native constitutions.

Diagrams.

4. I would beg to call particular attention to the diagrams which immediately follow Section II. of this report, and which exhibit in a manner which renders reference easy, all the principal facts connected with the sanitary condition of the two armies, European and Native, serving in the Madras Presidency for a period of seven years.

Gaols.

5. A detailed report will be found, under the head of gaols, Section III., on the sanitary condition during the year under report, of the prison population.

From this it will be seen that the causes which have affected the public health generally throughout the Presidency, have operated to increase the death-rate among prisoners.

The high prices and, in many parts of the country, the entire failure of the usual rains, produced severe distress bordering upon famine. A large increase of crime against property, has, as usual, accompanied a season of severe agricultural distress, and has not only caused the gaols to be overcrowded, but has filled them with a population peculiarly liable from its reduced condition to disease.

The average number of prisoners confined in the gaols throughout the Presidency (exclusive of prisoners sentenced to short periods of confinement, not exceeding one month) for five years from 1861-62 to 1865-66 has been 7,620. The average number of prisoners during 1866 has been 9,457. The average death-rate for these five years was 109·5 per mille.

The average death-rate for the year under report has been 124·5, showing an increase in the death-rate of 15 per mille.

The gaols at which the mortality has been most remarkable are Berhampore and Tellicherry.

Berhampore is in the Ganjam district, where four months famine prevailed. The gaol was terribly overcrowded with a criminal population of which

which many arrived at the gaol in a dying condition. The mortality was here 460·9 per mille.

The mortality in the gaol at Tellicherry was 783 per mille; the principal diseases which occurred in this gaol were dysentery, cholera, and gaol diarrhoea; but I fear it can hardly be doubted that the great mortality that has taken place must be mainly attributed to defective ventilation and overcrowding. A detailed account of the sickness which prevailed here during 1866 will be found in Section III.

Large central gaols are under the orders of Government in course of construction, so that within a short time the dangerous overcrowding which has for many years caused a lamentably high death-rate in all our prisons will entirely cease.

The attention of the Government has also been directed to the overcrowding which takes place in the taluq subsidiary gaols, where prisoners under short sentences of less than a month are confined. In some of these places, which are dark and ill-ventilated dens, totally unfit for human occupation, outbreaks of cholera have been of frequent occurrence. A committee is engaged in studying the requirements in this respect of every district in the Presidency. Existing buildings have been already temporarily improved, and large additions will be made so as to secure to this class of prisoners as well as to those sentenced to long periods of imprisonment, airy and healthy places of confinement.

6. The year under report is the first during which any attempt has been made to obtain mortuary returns from the various provinces of the Presidency. Health of the civil population.

A registration of deaths in each district has been introduced under the direction of the Board of Revenue.

The heads of villages and the kurnums, village accountants, are required to keep registers of deaths occurring in their villages. These are collected at the head quarters of each taluq, and forwarded every month to the Collector's office, where they are tabulated and forwarded through the civil surgeon to the office of the Sanitary Commissioner.

Some progress has been made in securing uniformity and punctuality in the preparation and dispatch of these mortuary returns, and an approximate idea may be formed of the number of deaths which has occurred during the year; but these statistics will remain of little value until periodical enumerations of the population are made, and the registration of births and deaths is enforced by law.

It is satisfactory to state that under Act X. of 1865 (Towns Improvement Act), municipalities are being formed in all the larger towns of the Presidency, which will hereafter furnish the necessary machinery for the correction of the health statistics of the principal towns. It is very much to be regretted that provisions for taking periodically a census of the inhabitants, and for the registration of births and deaths, were omitted from the Act. As, however, it will soon be necessary to revise the Act, I trust that the opportunity will be taken to supply this deficiency. At present the deaths in the towns throughout the Presidency are included in the district mortuary returns furnished to my office by the Collectors of districts.

From these remarks it will be seen that the data upon which an estimate of the public health during the past year, 1866, can be formed, are most incomplete. There are, except for the town of Madras, for which imperfect mortuary returns have for some years past been collected, absolutely no means of comparing the death-rate of 1866 with that of previous years.

From the district returns, *vide* Section IV., it will appear that out of a total population, estimated at 21,844,694, there have occurred during the year 1866, 5,86,225 deaths, or a death-rate of 26·8 per thousand. If the population given could be supposed to be correct, there is reason to believe that the death-rate is under-estimated. Of this death-rate cholera furnishes 9·06 per mille.

The districts which show the largest rate of mortality are, as might be expected, those in which the agricultural population suffered most severely from the failure of the season, namely, Ganjam, in which the death-rate is 55·3 per mille, and Bellary 41·8 per mille, of which 19 per mille arose from cholera. But I am satisfied that these returns fail entirely to represent the great mortality which is known to have occurred in these districts.

Town of Madras.

7. The system under which the mortuary returns for the town of Madras are prepared, and the imperfect data upon which they are framed, have been fully reported to Government. The necessity of providing by legislative enactment for taking a census of the chief town of the Presidency, and for enforcing the registration of births and deaths, has been recognized. Provision has been made for these important objects in the amended Municipal Act, which is under the consideration of the Council for making laws and regulations. With an accurate periodical enumeration of the inhabitants, and an exact registration of births and deaths, the causes of death, and the localities in the town of Madras where epidemic and endemic diseases most extensively prevail, will be correctly known, and a sure guide will be furnished to the municipal authorities in the labours to improve the sanitary conditions of the large and increasing population.

The population of the town of Madras is estimated, according to the very imperfect census taken by the Municipal Commissioners in 1861, at 427,471, but probably 450,000 would more correctly represent the present population. The death-rate calculated on this last number for the year 1866 has been 31·2 per mille.

The average death-rate during the last six years has been 28 per mille, thus showing the effect during the past year of the distress, owing to the high price of food which has prevailed. Of this rate of 31·2 per mille, cholera has contributed 6·9.

From the first institution of the Sanitary Commission in 1864, the condition of the public health of the town of Madras and the most urgent sanitary improvements required, have received anxious and continued attention.

In 1865 a detailed report on the condition of the town of Madras was submitted to Government by the President of the Sanitary Commission. It is unnecessary that I should recapitulate the details contained in this Report, but it may be briefly stated regarding Madras, that "the drainage of the town is very defective, there is no other water supply than that afforded by wells, which have become so contaminated by the percolations of the surrounding soil as to be dangerous to public health; the town is insufficiently lighted, the conservancy is most imperfect, and suitable market-places and slaughter-houses are most urgently required." I have in another portion of this Report shown what are the evil results on the public health of the inhabitants of the neglect of past years, as shown by a large increase in the death-rates and the increase and permanence of miasmatic diseases. It is satisfactory to be able to state that vigorous action has been taken by the State to remedy the defects noticed above. In a few months there will be an ample supply of pure drinking water brought from the Cortiliar river to Madras, and under the instructions of Government, an elaborate and complete system of drainage has been prepared by Captain Tulloch of the Engineers, who has been sent to England to complete his project.

The Municipal Act is undergoing revision, and the taxation necessary to enable the municipality to raise a loan for the execution of these important works is now before the Legislative Council. Increased activity has been shown by the municipality in the improvement of the town and the abatement of the numerous nuisances which have for so many years dangerously affected the public health.

We may confidently expect that the progress which has already been made in ameliorating the condition of the inhabitants of Calcutta and Bombay will be soon witnessed in Madras, and that in another year the important public works which are so urgently necessary will be commenced.

In Section V. will be found detailed the inspections which have been made of military and civil stations by the Sanitary Commissioner, and a notice of subjects connected with the sanitary administration of the Presidency.

In conclusion, I beg to express my thanks to the Medical Department of the Army for the statistical information furnished to me; and to my secretary, Dr. Arnold Smith, to whose labour I am indebted for the preparation of the statistical tables and diagrams, which form the most important part of this Report, and which, I trust, will be found a valuable contribution to the sanitary history of the army in India.

SICKNESS AND MORTALITY AMONGST TROOPS SERVING IN THE MADRAS PRESIDENCY.

8. THE following statistics of the European and Native Army serving in the Madras Presidency have been prepared with reference to the following headings; the statistics relating to British and Native Troops being separately considered. Division of the statistical report.

- 1st. General return of the sickness and mortality of the army.
- 2nd. The sickness and mortality in each division of the army.
- 3rd. The sickness and mortality of each station in the Presidency which has been garrisoned by troops.
- 4th. The sickness and mortality among troops marching.

The first and second returns have been compiled entirely from the original quarterly returns obtained from the Inspector General, Indian Medical Department, to whom my best thanks are due for the readiness with which these documents were at all times placed at my disposal.

The third class of returns were prepared entirely from weekly stational returns, received from the Deputy Inspectors General and Senior Medical Officers of each station of the army for the use of my office.

They are a simple compilation of the weekly regimental returns in use by the whole British army, and give an accurate report of the sickness and mortality amongst troops in quarters as contradistinguished from the divisional quarterly returns, which include the sickness and mortality of troops marching within the limits of the division.

The fourth return of troops marching, shows the sickness and mortality of troops on the line of march. The Quartermaster General supplies me with a half-monthly memorandum of the movement of troops in the Presidency, which has enabled me to call upon Deputy Inspectors General of Divisions for this particular information.

I am indebted to the Inspector General, British troops, for the return of British troops marching, and to the Adjutant General of the army for such other information as I required for compiling this Report.

9. It may be here stated that this is the first time that *Annual Stational Returns* have been compiled in this Presidency,* so far as I am aware of, and the information afforded, I consider peculiarly valuable in a sanitary point of view, as by them the healthiness of stations may be at once contrasted, and the effect of sanitary improvements judged of by the health of troops. In recording the sickness of stations it will in future be very desirable if the sickness and mortality from particular blocks of barracks, lines, &c., situated in different parts of the same contonment, are recorded, as has been done in the case of Secunderabad in this Report. Annual stational returns.

The following remarks made by Dr. Leith, the President of the Bombay Sanitary Commission, in his Annual Report for 1864, bears upon the subject of stational returns :—

“It seems desirable to begin a record that may hereafter be useful in determining the effects of climate and of locality in different divisions and stations of the army, and in doing so it is necessary to take the effectives who are stationary, apart from those who are marching, and separate also from the invalids and convalescents, as these may not have acquired their diseases where they are at present located, but may have imported them from another station or another division. The admissions into hospital among the effectives will afford a criterion of the comparative healthiness or otherwise of stations, but an approximation only to the amount of mortality attributable to a locality is attainable, because chronic cases of sickness are often transferred to sanatoria, or depôts, where they terminate fatally.”

10. The returns of sickness and mortality here given will differ considerably from Returns different from others.

* Late Sanitary Commission, in its Second Annual Administration Report, published in the Returns of the Army in the form of Stational Returns, but the time afforded for their preparation was too short to make them of much value.

from those prepared by the Principal Inspector General, as these have been compiled (as before stated) entirely from the weekly and quarterly army returns, whereas the former are prepared from the divisional and regimental annual returns, and therefore include the sickness and mortality of every regiment found within the limits of the Presidency on the last day of the year, although some of them may have served elsewhere during more or less of this period. In the Inspector General's Returns the sickness and mortality of regiments which have left the Presidency before the end of the year are not included. Such information is not altogether suitable in its application to the peculiar purpose I have in view, which is to show the sanitary condition of localities while giving the mortality and sickness of the whole army during the period it has *actually* served in this Presidency.

It should be here stated that some of the stational returns are not complete for the whole year, 1866, in consequence of some Deputy Inspectors General having omitted to send in supplementary returns for the three days at the end of the year (December 29th, 30th, 31st) which, from the weekly returns not forming aliquot parts of the calendar month, should have been included in the last week of the year. Fortunately, so obvious a course of proceeding has only been omitted in a few stations which are noted in the Appendix.

Comparison of sickness and mortality between past and previous years.

11. Comparisons have been shown between the sickness and mortality of the army of the past year, and that for six previous years; viz., from 1860 to 1865 inclusive. As this has been a period of peace, an opportunity is afforded of examining the health of the army serving in the Madras Presidency uninfluenced by the casualties of war.

Causes of error in statistical returns.

12. Every exertion has been taken to make the information conveyed in these returns as accurate as possible, but army statistics of sickness for short periods will always be liable to certain flaws and imperfections depending to a great extent:—

1st. Upon the amount of care taken by regimental medical officers in the proper designation of diseases admitted into hospital, and their subsequent nosological classification.

2ndly. The greater or less degree of correctness of compilation of the Army Medical Returns.

3rdly. The system adopted in different corps as to the admission of patients in hospital, and their subsequent discharge to duty; as for example, the longer or shorter periods during which some medical officers keep soldiers reporting themselves sick under observation, although not borne on the sick list, and again the practice of some medical officers of striking off the sick list men capable of performing light or special duties, while other officers retain them on the sick list until fit for all duties.

It is a matter of regret that one uniform system of returns has not been adopted by the sanitary departments of the three Presidencies, as it would facilitate comparison. It is with that object that the arrangement of this Report has been assimilated as much as possible to that of the Bengal Commission.

With regard to the first two causes, the following extract from Dr. Parkes' Work on Practical Hygiene bears upon the necessity of greater accuracy in our statistical returns than has hitherto obtained in this Presidency.

“A great responsibility rests on those who send in inaccurate statistical tables of diseases; for it must be remembered that the statist does not attempt to determine if his units are correct; he simply accepts them, and it is only if the results he brings out are different from the prior results that he begins to suspect inaccuracy.”

SECTION I.

SICKNESS AND MORTALITY AMONGST EUROPEAN TROOPS.

13. THE strength of the British army serving in the Madras Presidency was on the 1st of January 1866, 13,946 effectives and 338 unattached men, making a total of 14,284. Strength of British Army from Adjutant General's returns.

On the 1st of January 1867 the effective men numbered 11,001, and the unattached, 344; in other words, the army was 11,345 strong.

There has, therefore, been a decrease in the strength of the army during the year, amounting to 3,336 men; of these 3,292 were effectives, and 44 unattached.

The term *effective* in the Adjutant General's return refers to men belonging to regiments, while those *unattached* are those who are on staff employ in the several departments of the army, such as the Commissariat, Ordnance, and Public Works.

14. The Effective List was increased during 1866 by 38 men recruited in India; by 123 transferred from England or the Colonies; 233 by transfers from corps in India; three joined from desertion, and eight were remanded from the Unattached List. Increase of effectives.

15. The decrease amongst the same class was as follows:—The Service lost 255 men by the expiration of their time of service; 753 were invalided for discharge or change of climate; 33 purchased their discharge; 3 were discharged by sentence of court martial, and 33 otherwise; 27 deserted; 922, including 799 men of the 105th Foot transferred to the Bengal Presidency, were sent to other corps in India. This number does not however include 58 effectives transferred to the Unattached List; 13 men transferred to England on duty; 1,002 men, consisting of Nos. 1 and 2 Batteries, 17th Brigade, Royal Artillery, 1st King's Dragoon Guards, and 1-18th Foot embarked for England; and 251 men died. Decrease of effectives.

16. There was no increase to the Unattached List, but 19 men were invalided; one man's time expired; 3 were discharged otherwise; 10 were transferred on promotion to the warrant grade; and 11 men died. Decrease of unattached.

As might be expected, the mortality has been higher amongst the unattached class from their more advanced age and other causes.

17. The average strength of the British army, as obtained from the medical returns,* was 11,498. Of this number 16,795 admissions took place into hospital, or 1,460·6 per mille. The average number of men sick in hospital daily has been 778·7, or in the proportion of 67·7 per mille; and the mortality in hospital has been 231, or at the rate of 20 per mille of average strength, while the deaths out of hospital amounted to 19, or 1·5 per mille, making the total death rate of the army for 1866 stand at 21·7 per mille. Average strength of British Army from medical returns; sickness and mortality.

The number of men invalided amounts to 645, or 56·68 per mille of strength.

The subject of invaliding is fully noticed in another portion of this Report.

The above figures show the sickness and mortality of the entire British army serving in the Madras Presidency for the year 1866; but in contrasting the health of the troops with former periods, the detachments† serving in the Straits and Andaman Islands are omitted, and the comparison is strictly confined to the army serving in Peninsular India and Burmah, that is to say, all those portions of it which lie within its eight grand military divisions from which quarterly medical returns are received.

18. The

* Quarterly Divisional Returns and Stational Returns of Port Blair, Singapore, and Penang included.

† The average strength of these detachments amounted during the past year to 319 men—total admissions 512, daily sick 17·1, deaths 4.

Sickness and mortality contrasted with previous years.

18. The following statement shows the rate of sickness and mortality of the British army serving in the Madras Presidency (as above described) contrasted with former years :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - -	1,565·7	1,387·5	1,325·5	1,248·1	1,555·1	1,466·5	1,425·1	1,456·5
Daily sick - -	66·9	63·7	62·8	57·7	66·7	64·3	63·6	68·1
Deaths in hospital -	16·4	13·5	15·8	16·2	17·6	20·3	16·9	20·3
Total deaths - -	- -	- -	- -	17·4	18·6	21·4	21·9	—
Strength of Army	13,037	14,164	13,096	12,333	12,792	12,675	13,016	11,179

From the above statement it will be observed that, as shown by the Adjutant General's Return, there has been a considerable decrease in the strength of the army during the past year amounting, according to the medical returns, to 1,837 men, as contrasted with the average strength of six years, and 1,496 for 1865.

Admissions.

19. There has been a slight increase of 31 admissions on the average, but a decrease of 10 on that of 1865.

Daily sick and mortality.

20. The daily average sick shows a slight increase of 4·5 and 3·8 on the average and past year. The mortality in hospital shows precisely the same death rate as that of 1865, but it is 3·4 above the average.

Cholera.

21. The death rate from cholera for the past year may here be stated to have been 2·5 per mille, while that of the previous year and the six years' average is 2·9 per mille.

Although the year 1866 has shown, as compared with the six previous years, a somewhat less favourable sanitary condition, the death rate of the British troops during 1866 has only slightly exceeded the most favourable death rate anticipated by the Royal Sanitary Commission for India, namely, 20 per mille; while during the last six years, from 1860–65 both inclusive, it was only 16·9 per mille.

Sickness and mortality contrasted with those of Bengal and Bombay.

22. The rate of sickness and mortality of the Madras army may be contrasted with those of Bengal and Bombay in the following Tables, as shown in the annual reports of the Sanitary Commissions for these Presidencies.

BENGAL.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.
Admissions - - -	2,051	2,045	1,970	1,838	1,641	1,605	1,856
Daily sick - - -	84	82	76	69	62	60	72
Deaths in hospital - -	35·6	44·7	26·8	22·4	19·6	23·4	28·7
Total deaths - - -	36·7	45·8	28·1	24·0	21·0	24·6	29·9

BOMBAY.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.
Admissions - - -	*	*	*	†	†	†	1,708·8
Daily sick - - -	1,987·6	1,722·2	1,821·5	1,688	1,514	1,520	—
Deaths in hospital - -	-	-	-	69·3	59·3	56·4	21·7
Total deaths - - -	28·8	19·5	20·8	12·9	14·4	33·8	23·4
	29·1	21·3	25·5	13·8	15·9	35·1	

* 1860–61–62. The figures for these years are taken from the Reports of the Adjutant General of the Bombay army, Nos. 2154, 2021, and 149 m, dated respectively 27th May 1861, 26th June 1862, and 13th May 1863.

† 1863–64–65. From the Annual Report of the Bombay Sanitary Commission.

From these statements it is to be observed that, as regards sickness and mortality, the army serving in this Presidency shows a lower rate than either those of Bengal or Bombay. The former stands highest in the rate of its admissions, daily sick and deaths.

23. The following statement shows the principal diseases which have contributed towards making up the admissions into hospital during the year 1866. Admissions from special diseases.

ADMISSIONS PER MILLE OF AVERAGE STRENGTH OF ARMY.

Small-pox.	Ophthalmia.	Dysentery Acute.	Dysentery Chronic.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Continua.	Rheumatism.	Venereal Diseases.	Phthisis Pulmonalis.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Acute.	Hepatitis Chronic.	Abscess and Ulcers.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
0.8	38.8	80.5	27.9	103.5	4.0	124.6	13.1	0.6	103.5	50.9	234.7	12.0	3.3	21.4	57.3	39.0	38.2	118.0	23.7	105.4	254.4

From this it will be observed that by far the largest number of admissions has taken place from venereal diseases (2,624); next in numerical amount, fevers of the intermittent type (1,393); continued fever and diarrhoea (each 1,158); dysentery (900); and hepatic affections (864.)

There have been only 45 admissions from cholera.

24. The deaths which have occurred during 1866 will be observed from the following statement, showing rate of mortality per mille of average strength : Deaths from special diseases.

DEATHS PER MILLE OF AVERAGE STRENGTH OF ARMY.

Small-pox.	Dysentery Acute.	Dysentery Chronic.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Continua.	Phthisis Pulmonalis.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Acute.	Hepatitis Chronic.	Atrophy and Anæmia.	Wounds and Accidents.	Insolatio.	All other Causes.
0.1	2.7	1.2	0.6	2.5	0.7	0.3	0.2	0.8	1.7	0.3	1.1	0.5	1.7	1.2	0.4	0.8	1.1	3.0

From this it will be observed that the greatest mortality has been made up of deaths—from dysentery, 45; hepatic affections, 34; cholera, 28; phthisis, 20; and insolatio, or death from high temperature, 13.

This sickness and mortality are more minutely considered in the divisional and station reports which follow.

CENTRE DIVISION.

25. The following are the stations situated within the limits of the centre division of the Madras army :—

Madras.
St. Thomas' Mount.
Poonamallee Depôt.
Palaveram.
Vellore.

Sickness and mortality.

Royal Artillery.
H. M.'s 60th Rifles.
Cantonment Hospitals of Madras, Vellore, and Saint Thomas' Mount.

26. The average strength of the troops serving in this division, consisting of the corps and detachments as per margin, has been 1,345. The total admissions from all causes have been 2,492; the daily average sick, 123; and the total mortality, 47. One death occurred out of hospital.

Cholera has not been prevalent in this division, there having been only 13 admissions and five deaths from this disease during the year. Fifty-four men were invalided.

Sickness and mortality of previous years.

27. The following Table shows the above statement contrasted with former years :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	2,314·2	1,580·8	1,786·5	1,604·1	1,800·5	1,870·6	1,809·4	1,852·7
Daily sick - - -	85·8	84·1	95·1	81·0	85·8	86·0	86·0	91·4
Deaths - - -	34·8	24·0	30·0	24·8	35·7	27·7	29·2	34·2
Admissions from cholera -	13·0	3·1	6·1	9·1	17·0	4·5	8·8	9·6
Deaths from cholera -	7·2	·6	4·0	4·5	7·6	1·7	4·2	3·7
Average Strength - -	1,378	1,577	1,466	1,968	1,705	1,763	1,642	1,345

It will be observed that the strength of the division has been slightly below the average, while the sickness and mortality have shown an increase.

Admissions.

28. The principal admissions and deaths which have made up the total sickness and mortality may be seen from an examination of Table No. 1, page 166, Appendix. The largest proportion of admissions has taken place—from venereal affections, 516; abscess and ulcers, 177; wounds and accidents, 159; diarrhœa, 154; hepatitis, 220; and dysentery, 176.

Mortality.

29. The largest proportion of deaths has been—from phthisis pulmonalis, 7; dysentery, acute and chronic, 10; and cholera, 5. The presence of the Poona-mallee dépôt within the division has been used practically as a coast sanitarium for a certain class of cases, and the number of men sent to do duty with the regiment in Fort St. George from Burmah and other places for the benefit of their health must be remembered when estimating the value of the above figures.

FORT ST. GEORGE.

Barracks.

30. The barracks for the regiment in Fort St. George consist of a building two storeys high, the one 14½ and the other 15½ feet high. The barracks take an oblong form, enclosing a space in the centre 520 feet in length, and varying from 38 to 67 feet in breadth.

Both the upper and lower storeys are occupied, although both are insufficiently ventilated, more especially the front; in fact, the construction and arrangement of these barracks are antiquated, and far behind what is now considered essential in barrack architecture.

In the report on Fort St. George by the late Madras Sanitary Commission, it was suggested that the lower storey should be given up for auxiliary purposes, and a third storey built for a dormitory. This has not, however, been carried out.

Sickness and mortality.

* Her Majesty's 60th Rifles.

31. The average strength of the corps, as per margin,* garrisoning Fort St. George, has been 498. The total admissions from all diseases has been 975; the daily average sick, 48·43; and the deaths in hospital, 8. Forty-three men were invalided.

Contrast with other stations.

32. Contrasted with other stations of the army, whose average strength exceeds 450, it stands low in the list as to its comparative salubrity, as will be observed from an examination of Table VI., page 177 of the Appendix. The rate of admissions is—1,957·8 per mille; daily sick, 97·2; and mortality, 16.

Out

* There is now in the fort a battery of artillery, but it has been omitted from this return, as it was not in the fort during the whole year.

Out of 10 stations it stands tenth on the list as regards admissions and average daily sick, and seventh as regards its mortality.

33. By far the greatest number of admissions is made up by venereal diseases, which stand at 280, or at the rate of 562·2 per thousand. High rate of venereal disease.

This high proportion of venereal disease in Fort St. George is discussed in a subsequent portion of this report.

34. The admissions from continued fever, with the exception of Rangoon, are the highest in the Presidency, viz., 169 or 370·8 per mille, and were described by Dr. Young, the surgeon of the regiment, as being nothing more than cases of ephemeral fever, caused by the heat of the air. Intermittent fever, on the other hand, stands low, only two cases having been admitted. Admissions from fever and diarrhoea high.

The admissions from diarrhoea are higher in proportion, excepting Bellary, than in any other station of the army, viz., 87 cases, or 174 per mille. There are only 25 admissions from dysentery, but hepatic diseases stand high; 66 admissions have taken place from this cause, or 143 per mille of strength.

The few cases of intermittent fever indicative of the absence of any marsh miasmata is remarkable.

35. The mortality has been chiefly made up by hepatic disease, dysentery, diarrhoea, and cholera; one death from each having occurred. Two deaths occurred from continued fever. Mortality.

SAINT THOMAS' MOUNT.

36. This station is one of the head quarter stations of the Royal Artillery serving in the Madras Presidency.

The station was inspected in December 1865 by the Madras Sanitary Commission, and many improvements suggested with regard to the barrack accommodation, which are being gradually executed. Barracks.

The men are accommodated in the old Horse Artillery Barracks, and what are called the North and South Barracks; they are single storied and of antiquated structure. Extra accommodation is very much required in order to give the men their proper amount of space, and it was suggested that an upper storey should be built on the north and south blocks. It has, however, been decided to build separate upper-storied barracks at Saint Thomas' Mount.

37. The Returns include Europeans treated at the cantonment hospital, and men belonging to the Madras Artillery. The average strength of troops at St. Thomas' Mount has been 453; the total admissions have been 697; the daily sick, 33; and the total deaths, 12. Ten men have been invalided. Sickness and mortality.

38. Saint Thomas' Mount stands sixth on the list as regards comparative salubrity, with the 10 principal military stations of the Presidency, the average number of admissions having been 1,538, and the daily sick 72 per mille. Contrast with other stations.

The mortality rate has been high, viz., 26·4 per mille, being last but one on the list.

39. The diseases which have chiefly contributed to make up the admission rate, have been, intermittent fever, 68; dysentery, 46; rheumatism, 43; and diarrhoea, 37. Venereal diseases contribute 113 or 249 per mille. The difference between the number of admissions from intermittent fever between this station and the one just considered, is very remarkable, and considering that the two are only six miles apart, with no remarkable difference in their topographical or geological feature, it must be concluded that this is due to a difference in their classification. Admissions.

In Fort Saint George the admissions, as we have just seen, are at the rate of four per mille; at this station they are 150 per mille, while the admissions from continued fever amount only to 26 per mille.

One admission has occurred from typhoid fever. The admissions from miasmatic diseases generally, as compared with other stations, are high.

The rate of admissions from ebrietas is high, and one admission has taken place from delirium tremens. There have only been four admissions from cholera, three of which were fatal.

40. The latter disease has been the most fatal of all other diseases, being at the rate of six per mille. Remittent and typhoid fevers, dysentery, hepatic and tubercular diseases, each contribute one death. Mortality.

Sickness and mortality of previous years

41. The following statement is compiled from some tables exhibiting the rate of admissions and deaths from the principal classes of diseases at this station, from 1829 to 1838, and is interesting as a means of contrasting present with past returns of sickness.

DISEASES.	European Horse Artillery.				European Foot Artillery.			
	Strength, 191.		Ratio per Mille to Strength.		Strength, 576.		Ratio per Mille to Strength.	
	A.	D.	A.	D.	A.	D.	A.	D.
Febris intermittens - - - - -	5	-	26.1	-	32	0.6	55.5	1.0
„ remittens - - - - -	12	-	62.8	-	15	0.5	26.0	0.8
„ continua - - - - -	5	0.2	26.1	1.0	13	0.1	22.5	0.1
„ ephemera - - - - -	17	-	89.0	-	52	0.1	90.2	0.1
Dysentery - - - - -	20	1	104.7	5.2	61	5.0	105.9	8.6
Diarrhœa - - - - -	19	0.2	99.4	1.0	38	0.7	65.9	1.2
Cholera - - - - -	3	0.6	15.7	3.1	2	0.3	3.4	0.5
Rheumatism - - - - -	29	0.2	151.8	1.0	45	0.3	78.1	0.5
Phthisis - - - - -	-	-	-	-	2	0.3	3.4	0.5
Respiratory diseases - - - - -	15	0.3	78.5	1.5	22	1.0	38.1	1.7
Hepatitis - - - - -	33	1.3	172.7	6.8	67	2.6	116.3	4.5
Other diseases - - - - -	272	1.5	1,424.0	7.8	484	2.5	840.2	4.3
TOTAL - - - - -	430	5.3	2,251.3	27.7	833	14.0	1,446.1	24.3

The death rate from 1860 to 1865 inclusive has been 26.2. The total admission rate per mille, as shown by the above table, is 1,646.6, and the death rate is 25.1. Contrasting these figures with those for the year 1866, we find that the rate of admissions has decreased during the past year, but the death rate remains as high as 26.4 per mille, a fact which indicates the persistent evil effects of ill-constructed barracks and of insufficient space, and will, I trust, be considered a sufficient reason for the rapid completion of the projected barracks.

The rate of admissions from intermittent fever is 48.2 per mille, while the admissions from continued and ephemeral fevers are 23.4, and 89.9 per mille respectively, facts which are worthy of notice when considered in connection with the prevalence of malarious fever at this station, which this year's stational returns would seem to inform.

POONAMALLEE.

42. This dépôt receives time-expired soldiers, invalids, recruits, and men sent from other stations who require a coast climate during convalescence, and the wives and children of those soldiers of the above description who are married.

Barracks.

43. This dépôt was inspected in December 1865 and January 1866, and a detailed report on its defects was submitted to Government. It is sufficient to state here, that the barracks in which the men are quartered are of the very worst description, and are at the present moment almost exactly the same as they were when described in the following evidence given before the Royal Sanitary Commission by Sir Patrick Grant.

“Full time it is that Poonamallee should be abandoned; the public buildings of every kind are, I really believe, the worst in the world occupied by British soldiers.”

The mean strength of this dépôt during the past year, has been 222. The admissions have been 562, and the daily sick 27. The deaths in hospital amounted to 18, and four deaths occurred out of hospital. One man was invalided.

No useful purpose is gained by any attempt to contrast the sickness and death rate of this station with that of others, as the material which makes up its average strength is altogether exceptional. The admissions into hospital have been 2,531.5, daily sick 124.6, and mortality 81 per mille of strength.

Admissions.

44. The principal admissions have been, hepatic disease, 86; dysentery, 72; rheumatism, 27. Venereal diseases amount to 73; tubercular affections amount to 39; digestive diseases, including hepatic diseases, amount to 117.

Mortality.

45. A large proportion of the mortality has been from dysentery and tubercular diseases, five from each having occurred. One fatal case of cholera is shown during the year. Under the new transport system, it has been proposed

posed to abandon Poonamallee as a depôt, and until this question is decided, no material alteration of the barracks has been attempted.

PALAVERAM.

46. The European troops which have garrisoned this station during the year are a detachment of Her Majesty's 60th Rifles (who go through their course of musketry instruction here) and the European veteran battalion.

Its average strength has been 200. The total admissions into hospital have been 153, and the daily sick 5·8. The deaths have been seven in, and one out, of hospital.

These figures can scarcely be fairly contrasted with the sickness rates of other stations, as the detachment of the 60th is constantly relieved from Fort St. George, and the remainder are old men.

47. The admission rate is 765, the daily sick 29, and the mortality 35 in, and five out, of hospital per mille. Sickness.

It has a higher death rate than any other station in the Presidency, which is to be accounted for by what has been stated in the last paragraph.

The principal diseases which have made up the admissions, are diarrhœa, 15; intermittent fever, 14; continued fever, 8, and ebrietas, 8.

48. The deaths have been chiefly made up by tubercular disease, 2; respiratory, 1; and cholera, of which last disease there were two admissions and one death. Mortality.

SOUTHERN DIVISION.

49. The following are the stations situated within the Southern Division :—

Trichinopoly and Wellington.

The average strength of the British troops serving in this division, consisting of the corps as per margin, has been 505. The total admissions from all causes have been 885. The daily sick 48·3, and the total mortality 13. There were only six admissions, and three deaths from cholera. Twenty-three men were invalided.

Sickness and mortality.
Royal Artillery.
Detachment, H.M.'s 102nd Regiment.
Convalescent Depôt.

50. The following Table shows the above statements contrasted with previous years : Sickness and mortality of previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1,150·0	1,250·1	2,125·6	1,398·9	1,638·3	1,428·1	1,441·1	1,752·4
Daily sick - - -	59·3	50·3	100·7	59·3	77·6	59·2	65·1	95·6
Deaths - - -	17·9	15·8	13·7	16·9	17·0	13·8	15·9	25·7
Admissions from cholera -	3·8	5·2	-	7·8	1·1	-	3·1	11·8
Deaths from cholera -	0·6	4·1	-	5·2	1·1	-	1·8	3·9
Average Strength. - -	1,559	1,609	947	767	882	939	1,132	505

51. It will be observed that the strength of the European force serving in this division, has decreased by more than one-half upon the average strength for the past six years. Taking this into consideration, with the fact that Wellington has been converted into a hill convalescent depôt, the greater increase in the sickness and mortality of this division may be fully accounted for; as the simple calculation of deaths per mille on a small force will always present apparently high death-rates, while the population of sanitarium necessarily contains a large proportion of persons predisposed to disease. With the exception of the year 1862, the rate of admissions is higher than that of any previous year. The death and daily sick rates have also considerably increased. The admissions from cholera have greatly risen as compared with former years. Causes of increased sickness.

52. The principal admissions during the past year have been made up by venereal diseases, 118; intermittent fever, 122; abscess and ulcers, 59; and wounds and accidents, 50. Admissions.

The admissions from the first of these diseases are at the rate of 233 per mille of strength. The admissions from bowel complaints are not high, although the same cannot be said of hepatic diseases.

Mortality.

53. The deaths have been made up by dysentery, phthisis, heart diseases, hepatitis, aneurism of the aorta, dementia, delirium tremens, anasarca, and erysipelas, from each of which one death has occurred.

Three deaths as above stated were from cholera.

TRICHINOPOLY.

Sickness and mortality.

54. The average strength of Europeans at this station, consisting of the corps and detachments as per margin, has been 220.

Royal Artillery.

Detachment, H. M.'s 105th Regiment.

Detachment, H. M.'s 102nd Regiment.*

* For two weeks.

The total admissions have been 323 ; the daily sick, 10·8 ; and the deaths in hospital, 5 ; 10 men were invalided.

Contrast with other stations.

55. Compared with eight other stations whose average strength is below 450, it stands sixth on the list as regards its rate of admissions and daily average sick, and fifth in respect to mortality, amounting to 1,468, 49 and 22·7 per mille respectively.

Admissions.

56. The principal admissions which have occurred at this station have been made up by hepatic diseases, 18 ; intermittent fever, 45 ; dysentery, 6 ; and rheumatism, 5.

Venereal diseases have contributed 37, or 168 per mille of strength.

There have been six admissions and three deaths from cholera, being at the rate of 27·2 and 13·6 respectively per mille.

Mortality.

57. All the deaths which have occurred at this station have been from cholera, excepting one case from aneurism of the aorta, and another of erysipelas.

WELLINGTON.

Sickness and mortality.

58. The average strength of this dépôt has been 285 for the period under review. The admissions into hospital, consisting of men of corps as per margin, have been 547. The daily sick has been 35·8, and the mortality in hospital 8. Thirteen men were invalided from this dépôt.

Royal Artillery.

H. M.'s 16th Lancers.

" 18th Hussars.

" 2-11th Regiment.

" 2-19th "

" 2-21st "

H. M.'s 2-24th Regiment.

" 3-60th "

" 76th "

" 102nd "

" 106th "

Sappers and Miners.

In this portion of the Report the statistical facts for the past year will alone be noticed ; but a history of the formation of this sanitarium, which was formerly a station for a British regiment, is noticed in another place.

The admissions have been at the rate of 1,919·3 per mille, the daily sick 125, and the mortality 28 per mille.

Admissions.

59. the admissions have been made up chiefly of cases of intermittent fever, 61 ; hepatic diseases, 46 ; dysentery, 24 ; and rheumatism, 24.

There have been 77 admissions from venereal diseases, or 270 per mille of strength. No case of cholera has occurred.

Mortality.

60. The mortality has been chiefly made up of dysentery, 2 ; delirium tremens, 1 ; hepatic disease, 1 ; phthisis pulmonalis, 1 ; diseased heart, 1 ; anasarca, 1 ; and dementia, 1.

MYSORE DIVISION.

61. THE following is a list of stations of which this division is composed, and of the troops marching during the year within the division.

Bangalore.

Cannanore.

Mulliaipooram.

Calicut.

Left Wing, Her Majesty's 76th Regiment en route from Bangalore to Bellary. Detachment of Volunteers from Bellary to Bangalore. Her Majesty's 1st or King's Dragoon Guards en route to Madras from Secunderabad.

Sickness and mortality.

62. The average strength of the troops in quarters, in addition to those on the line of march, has been 2,841, and the corps which have made up this strength, exclusive of those on march, are shown in the margin.

Royal Artillery.

H. M.'s 16th Lancers.

" 2-10th Regiment.

H. M.'s 102nd Regiment.

Sappers and Miners.

The total admissions in hospital from all causes have been

been 2,634. The average daily sick has been 123·6, and the total deaths 35 ; one of the latter occurred out of hospital ; 105 men were invalided.

There have been only six admissions and three deaths from cholera during the year.

63. The following statement shows the rate of sickness and mortality in this division as contrasted with previous years :—

Sickness and mortality of previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1226·0	1322·2	1029·9	1103·3	1247·2	1192·6	1198·0	927·1
Daily sick - - -	68·3	72·9	61·7	49·7	51·3	49·4	58·3	43·5
Deaths - - - -	9·0	13·1	7·9	11·4	10·7	12·5	10·8	11·9
Admissions from cholera	8·2	18·3	1·1	1·4	0·7	2·2	5·1	2·1
Deaths from cholera -	4·5	8·2	0·7	0·7	0·3	1·2	2·5	1·0
Average strength -	2438	2666	2646	2708	2892	3099	2741	2841

It will be observed that the average strength of the troops serving in this division has slightly increased during the past year ; in fact, excepting last year, it is higher than the previous one since 1860.

64. The number of admissions and daily sick has considerably decreased, none of the former years under review showing such favourable results. The mortality from all causes has shown, on the other hand, an increase of one per mille on the average of six years.

Increase of sickness.

In estimating the value of this mortality, which may be stated at 12 per mille, it must be observed that in 1861 the deaths from cholera alone were eight per mille.

Last year the admissions from cholera were at the rate of 2·1, and the deaths one per mille. The mortality therefore from ordinary causes has shown a very considerable increase in this division during the past two years.

65. The admissions have been chiefly made up of venereal diseases, 368 ; wounds and accidents, 282 ; abscess and ulcers, 262 ; dysentery, acute and chronic, 176 ; hepatitis, acute and chronic, 133 ; continued fever, 133 ; and intermittent fever, 105.

Admissions.

66. Venereal diseases, although standing at the rate of 129·5 per mille, are lower than in any other division except the southern.

Low rate of venereal disease.

67. The diseases which have contributed to the mortality have been chiefly caused by hepatitis, to which cause nearly one quarter of the deaths, eight, is attributable ; dysentery has contributed five, and cholera three. Of the remainder two have occurred from small-pox and phthisis, aneurism of the aorta, and a death has also occurred from each of the following diseases :—

Mortality.

Paralysis, spitting of blood, scurvy, inflammation of the colon, epilepsy, diseased heart, inflammation of the kidney, stricture of the urethra, bronchitis, and delirium tremens.

BANGALORE.

68. The troops at Bangalore have been quartered during the year partly in the new barracks on the racecourse, and partly in the old barrack in the cantonment. The former are one-storied buildings, with good basements, 2½ feet above the ground. They consist of eight blocks, occupying two sides of a square. They are well separated, and have a free current of air through them in all directions.

Barracks.

Each block consists of three rooms, opening into each other by communicating archways, with an enclosed and open verandah on each side. The end barrack-rooms are 76 feet by 24 feet, and the central one 84 feet by 24 feet.

These barracks are intended for occupation by the European cavalry regiment, and a portion of the artillery stationed here. During the past year, however, the former corps has occupied the blocks of barracks which will

eventually be assigned to the regiment of British infantry. Her Majesty's 10th Regiment has occupied the old condemned European infantry barracks, and some of the new blocks on the racecourse, in company with a battery of artillery.

The horse artillery has been quartered in their old barracks, which are roomy spacious buildings.

Sickness and mortality.

Royal Artillery.
H.M.'s 16th Lancers.
" 2-10th Regiment.
Sappers and Miners.

69. This station, with the exception of Secunderabad, contains the largest European force in the Madras Presidency. Its mean strength, which has been made up of the corps as per margin, has averaged 1,874. The total admissions into hospital have been 1,506; the daily average sick 67·34, and the total mortality 24, out of which one death occurred out of hospital. Sixty-six men were invalided.

Contrast with other stations.

70. Compared with 10 other stations in the Presidency, whose average strength is above 450, Bangalore stands remarkably high as to its comparative salubrity.

An examination of Table 6, Appendix, page 177, shows the following results :—

As regards admissions into hospital and average daily sick, Bangalore stands first on the list, these being at the rate of 803·6 and 35·9 per mille respectively. As regards its rate of mortality it stands third on the list, this having been 12·2 per mille in hospital and 5 out.

Admissions.

71. The greatest number of admissions has taken place from venereal disease, which, as usual, shows a greater number than any other disease, namely 204, or at the rate of 108·8 per mille, which compared with other stations is low. The principal diseases which have contributed to make up the admissions have been diarrhoea, 137; ophthalmia, 73; ebriositas, 70; intermittent fever, 66; and dysentery, 62. The admissions generally from these diseases, with the exception of ophthalmia and ebriositas, are low when compared with other stations. From the two diseases mentioned, the rate has been very high comparatively. A very large proportion of cases of remittent fever (52) has been admitted, and one admission from fever, of the typhoid type, must be noticed.

Mortality.

72. The mortality has chiefly been made up by the following diseases: Cholera 3, dysentery 3, small-pox 2, hepatic 1, and tubercular diseases 1. The other diseases from which deaths have occurred are to be found amongst those enumerated in the divisional return.

CANNANORE.

Barracks.

Royal Artillery.
H. M.'s 102nd Regiment.

73. The average strength of the station of Cannanore, garrisoned by the regiments as per margin, has been 694. The barracks of the European infantry are built close to the cliff, and from their site are well exposed to the sea breezes. They are very old-fashioned, consisting of a long continuous room, which forms a barrack square.

Sickness and mortality.

74. The total admissions from all diseases have been 998. The daily average sick 50·3, and the total mortality 10; 39 men have been invalided. There have been no admissions from cholera.

Contrast with other stations.

75. Compared with nine other stations whose strength is over 450, Cannanore stands fourth on the list as regards its admissions, which are at the rate of 1,438 per mille, and it stands fifth on the list as regards its daily average sick and mortality, which are 72·5 and 14·4 respectively per mille.

Admissions.

76. Venereal diseases have contributed 141 cases to the total admissions, or 203 per mille of strength. One case of stricture of the urethra terminated fatally.

The other diseases which have made up the admissions have been continued fever 122, dysentery 87, diarrhoea 78, and hepatic diseases 76. Compared with other stations, these admissions have generally been high.

With regard to the admissions from continued fever, which are higher in this than in other military stations in the Presidency, except Rangoon and Fort St. George, the deputy inspector general of hospitals (Dr. Mackenzie) makes the following remarks: "During the quarter (first) embraced in the return, the only

only circumstance worthy of prominent notice is the prevalence of a mild form of continued fever at Cannanore, in the month of March, chiefly amongst the officers of the 102nd regiment and their families, who occupied the houses on the cliff close by the sea, and which all the medical officers unite in ascribing to the great heat and the unusually lengthened period of the 'long shore winds.' Fortunately it was found very amenable to treatment."

77. The mortality has been made up as follows:—Dysentery, one death; Mortality. tubercular disease, two; digestive diseases, four, and venereal disease, one.

MULLYAPOORAM.

78. This is a small station, garrisoned by a detachment of the European Sickness and regiment from Cannanore, which during the past year has been Her Majesty's mortality. 102nd. The average strength of the detachment has been 86. There have been 35 admissions into hospital from all causes, and its average daily sick has been 1.5. There has been no death.

79. Compared with eight other stations whose strength is under 450, it stands first on the list as regards its rate of admissions and deaths. The former stands at the rate of 406.9. Its daily sick has been at the rate of 18.2 per mille. These figures show it to have been the healthiest station in the Presidency which has been occupied by European troops. Contrast with other stations.

80. There has been no admission from cholera. The principal diseases which Admissions. have made up the admissions have been—diarrhœa, 5; dysentery, 4; ophthalmia, 1; rheumatism, 1; hepatitis, 1; and continued fever, 1. One admission has occurred from typhus fever. Venereal diseases contribute three.

Altogether there have been 18 admissions from zymotic disease, 9 from local affections, and 8 from accidents.

CALICUT.

81. This station on the western coast is also garrisoned by a detachment from Cannanore; its average strength has been 85 men of Her Majesty's 102nd Regiment. The total admissions have been 46, the daily sick 2.8, and the mortality 1. Sickness and mortality.

It has not therefore been quite so healthy as Mulliapooram, but it still stands high on the list, as compared with other stations. Its admission rate per mille is 541.2, its daily sick 33.1 per mille, and its one death gives it a mortality rate of 11.7.

82. It stands second on the list as regards its admissions, and, next to Mulliapooram, has been the healthiest in the army in this respect. It is fourth on the list of the nine stations whose strength is under 450 as regards its daily sick and mortality rate. Contrast with other stations.

83. Its admissions in hospital have been made up by—zymotic diseases, 25; local, 13; and accidents, 8. Admissions.

Of the former, 11 are from miasmatic causes, and 13 are venereal.

Six admissions have taken place from dysentery, three from diarrhœa, two from hepatic disease, and one from intermittent fever and ophthalmia. There have been two admissions from delirium tremens.

84. The only death which occurred was from hepatic disease.

Mortality.

CEDED DISTRICTS.

85. The following are the stations of the British troops composing this division:—

Bellary Ramandroog.

The average strength of the troops in quarters, as shown per margin, as well as those on the line of march, has been 898.

Royal Artillery.
H. M.'s 76th Regiment.
Depôt Ramandroog.
H. M.'s 2-21st, marching *en route* to Secunderabad.
Detachment of Volunteers, *en-route* to Madras.

Sickness and mortality.

86. The total admissions from all diseases have been 1,596, the daily average sick 73·9, and the deaths in hospital 9. Sixty-three men have been invalided. There has been one admission from cholera during the year.

Sickness and mortality of previous years.

87. The following Statement shows the rate of sickness and mortality in this division, contrasted with former years :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1099·8	1458·2	1400	1062·6	1693·9	1352·4	1354·0	1777·2
Daily sick - - -	44·2	56·8	66·2	57·3	89·2	77·4	66·1	82·2
Deaths - - -	9·4	9·0	26·7	14·4	14·6	27·0	17·2	10·0
Admissions from cholera -	1·8	6·0	34·8	7·7	23·5	24·5	17·0	1·1
Deaths from cholera -	-	2·0	15·1	0·9	-	8·4	4·5	-
Average Strength - -	1062	993	1120	1037	1232	1183	1104·5	898

As in other divisional returns, it will be observed that the average strength has considerably decreased on the average, it having been smaller during 1866 than any of the previous years under review.

On the other hand, the total number of admissions has considerably increased, the rate being higher than any preceding year.

The same may be said regarding the daily sick, which, excepting 1864, has been higher than any previous year.

Although there has been such an increase in the amount of sickness, it is gratifying to see that the rate of mortality, as compared with that of former years, has decreased in a far greater degree than the former elements have increased.

The rate of mortality for the whole division has only been 10 per mille from ordinary causes, and there has been no death from cholera. It will be observed that for the last four years the rate of mortality has been somewhat high, but that in 1860 and 1861 the rate was even lower than it has been during the past year.

The admissions and deaths from cholera appear to have been very high during 1862 and 1865. In 1864, although the admission rate from this disease stands at 23·5 per mille, there are no deaths, which is somewhat remarkable.

Admissions.

88. The principal admissions have been from diarrhoea, 170, which is a remarkably high number, as compared with other divisions. Ophthalmic diseases (120) have also been high; also continued fever (96).

There have been 89 admissions from respiratory diseases, and 144 from abscesses and ulcers. Venereal diseases contribute the large number of 219 cases, or 243·8 per mille of strength.

Mortality.

89. The mortality in this division, consisting of nine deaths, has been entirely made up as follows: dysentery contributes 3, heart diseases and hepatitis, each, 2, and febris intermittent and phthisis pulmonalis, each, 1.

This very low rate of mortality, existing in connection with an increased rate of sickness, at a time when famine and epidemic diseases, such as cholera and fever of a severe type, were severely visiting the civil population of the district, is worthy of notice, and is commented on elsewhere.

The deaths among the civil population of Bellary from cholera are shown by the civil mortuary returns to have been at the rate of 19 per mille.

BELLARY.

Barracks.

Royal Artillery.
H. M.'s 76th Regiment.

90. The average strength of the troops garrisoning this station, composed of the corps as per margin, has been 851. The 76th Regiment has been quartered in half-company barracks, 19 in number, some of which are given up for subsidiary purposes. Each barrack consists of a central room, 178 feet by 24 feet, with an enclosed and outer verandah, and is not therefore built in accordance with the principles which are now laid down by the Government of India.

A sanitary inspection of this station was made in October last by the Sanitary Commissioner, and some of the rooms were found over-crowded, and one of the enclosed verandahs occupied.

The Artillery occupied one of these blocks during a portion of the year 1866, having

having previously been quartered in some old-fashioned barracks, which have been condemned for some years past.

New barracks have been built for the latter corps.

91. The total admissions have been 1,525, the daily sick 72·23, and the deaths in hospital seven. Sickness and mortality.

92. Compared with the other stations, whose strength for the year averages over 450, the station of Bellary stands low, viz., eighth on the list as regards its rate of admissions and daily sick, which are 1,792 and 84·8 per mille respectively. As regards its mortality rate, it stands highest on the list, excepting Tonghoo, showing only 8·8 deaths per mille for the year. Contrast with other stations.

93. It is needless almost to say, that the greater proportion of diseases has been made up of venereal diseases, which have contributed 215 or 252·6 per mille of strength, or about one-seventh of the total admissions. Ophthalmia contributes a very large number, 111 or 130·4 per mille, being more than three times the proportion shown by any other station in the army. High rate of ophthalmia.

This was probably due to the excessive heat and dryness of the season, and the intense glare for which this station is remarkable. The proportion of cases of diarrhoea is greater than any other station of the army, being 163 or 191·5 per mille of strength. Continued fever and dysentery are also very high, viz., 100 and 87 cases respectively, being at the rate of 117·5 and 102·2 per mille of strength. Excepting Rangoon and Fort Saint George, Bellary has suffered from zymotic disease in greater proportion than any other station of its class in the army, and higher than any one other from diseases of the miasmatic order.

94. The mortality of the station, as may be expected from what has been said of the division, is low. Mortality.

Three deaths have occurred from dysentery, two from hepatitis, one from phthisis, and one from aneurism.

The outbreak of cholera in Bellary in 1862 is thus noticed in the Report of the Principal Inspector General: "Towards the end of May, Her Majesty's 74th Highlanders at Bellary contracted cholera, apparently from the pilgrims returning by the road near the barracks from the Humpi festival, and the mortality was rather alarming for a few days, but the epidemic disappeared on the setting in of the early monsoon rains."

"The batteries of Royal Artillery at this station fortunately escaped the disease, but it seems to have been carried up to the Ramandroog Sanitarium by travellers, and to have effected a few of the Europeans of the Convalescent Dépôt."

95. The gathering of Natives to the Humpi festival has been a frequent source of danger to the troops at Bellary, and preventive measures have been adopted to keep pilgrims out of the station by placing a "cordon" of sentries around the cantonment. Humpi festival, a cause of sickness.

Last year, precautionary sanitary measures were adopted by Government at this yearly gathering, to which it is but fair to attribute the absence of epidemic disease from the assembled multitude.

RAMANDROOG.

96. The average strength of this Dépôt Sanitarium made up of the corps as per margin has been 42. The total admissions from all causes have been 80. Sickness and mortality.

The daily average sick 3·2, and the mortality 1. The admissions have been made up by 38 from the miasmatic, 8 enthetic, 1 tubercular, and 32 of the Local class, of which 13 are digestive complaints. H. M.'s 2-21st Fusiliers.
D. Battery, B. Brigade, Royal Artillery.
H. M.'s 76th Regiment.

Of the miasmatic admissions, intermittent fever contributes 11, dysentery 9, diarrhoea 5, ophthalmia 6, and rhéumatism 4. Hepatic diseases number 7.

The only death is from diseased heart.

Further notice is taken of this Sanitarium in another portion of this Report.

NORTHERN DIVISION.

97. THE only stations from which medical returns of sickness have been received and entered in the divisional return for 1866, have been from the following; but the number of men serving therein has been so small, that it may almost be said that there were no British troops at all in the Northern Division during the past year; at any rate the number is so small as to deprive the returns of any interest.

MASULIPATAM—VIZAGAPATAM.

Royal Artillery.
Garrison Hospital.

The average strength of the troops serving in the Northern Division has been only 11, made up by a detachment of the B. Battery, 23rd Brigade Royal Artillery.

The European Veteran Company stationed at Waltair has not been entered in the divisional returns, but is noticed when considering the health of the station of Vizagapatam.

Sickness and mor-
tality of previous
years.

98. The following statement shows the rate of sickness and mortality in this division for six previous years:

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1960.0	1181.0	1433.9	2059.7	2123.5	500.0	1696.8	363.6
Daily sick - - -	59.3	37.0	45.9	73.1	75.2	1.7	54.8	12.7
Deaths - - -	10.7	45.2	18.8	29.8	29.6	-	25.6	-
Admissions from cholera -	10.7	24.6	-	14.9	-	-	10.7	-
Deaths from cholera -	-	16.4	-	7.4	-	-	4.7	-
Average Strength - -	278	243	159	134	170	22	167.6	11

It will be seen that the average strength of Europeans serving in this division has fallen from an average strength of 167.6 to 11; any comparison therefore between present and past sickness is unnecessary.

Sickness and
mortality.

99. The four admissions are made up from intermittent fever, venereal disease, and two other ailments of a trifling nature.

There has been no death in any of the troops included in the divisional returns.

The sickness and mortality of former years, it may be observed, are very low.

VIZAGAPATAM.

European Infantry, Veteran Company.
Garrison, European Effective.
Detachment, 23rd Brigade, R. A.

100. The average strength of Europeans obtained from the medical returns of this station has been 96. The troops which have made up this strength are shown in the margin.

As has been said of the station of Palaveram, the Europeans are mostly old soldiers who have resided all their lives in India, and whose death-rate may be expected to be high.

Sickness and
mortality.

101. The total admissions have amounted to 59, the daily sick to 1.7 and the deaths to 3.

Contrast with
other stations.

102. Compared with eight other stations with a strength under 450, Vizagapatam stands third on the list as regards its rate of admissions (614.6 per mille). First, as regards its daily sick (18 per mille) and last on the list, with the exception of Palaveram, as regards its mortality rate, which amounts to 31.2 per mille.

Admissions.

103. Zymotic diseases have contributed 27 admissions; local, 28; developmental, 1; and violence 3. The first consists of 22 of the miasmatic order, 2 venereal, and 3 drunkenness.

The principal diseases have been intermittent fever, 9; dysentery, 5; diarrhoea, 1; rheumatism, 4, and one case of delirium tremens.

Mortality.

104. Of the three deaths, intermittent fever contributes 1; and disease of the lungs another; the third belongs to the miasmatic order.

HYDERABAD SUBSIDIARY FORCE.

105. The average strength of the force serving in the Hyderabad Division made up of the troops as per margin has been 2,674. Sickness and mortality.

The total number of admissions into hospital has been 4,055. The average daily sick 203·8, and the mortality has been 87;* three of the deaths having occurred out of hospital: 187 men have been invalided.

Royal Artillery.
1st King's Dragoon Guards.
H. M.'s 18th Hussars.
" 18th Royal Irish.

H. M.'s 108th Regiment.
" 2-21st Regiment.
Cantonment Hospital.

106. The following statement shows the mortality and sickness in this division as contrasted with former years:—

Sickness and mortality of previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1960·8	1534·9	1090·0	1164·9	1586·5	1503·2	1479·1	1516·4
Daily sick - - -	71·9	63·1	48·6	68·1	64·6	69·2	62·3	76·2
Deaths - - -	19·8	13·0	12·7	13·0	9·2	20·5	14·7	31·4
Admissions from cholera - -	8·3	-	3·2	0·4	1·1	3·0	2·9	5·6
Deaths from cholera - -	2·5	-	0·8	-	0·7	1·9	1·0	5·6
Average Strength ¹ -	3,171	3,361	3,376	2,370	2,605	2,581	2,916·6	2,674

It will be observed that the strength of this force has decreased on the average of the previous six years, being 236 below its usual strength. It has however increased on that of the past two years.

107. The rate of sickness has increased during the last year, the admissions into hospital having been more than the usual average by 36·3 per mille of strength. The average daily sick has also increased by nearly 14 per mille, having been higher than any of the previous years under observation. Increase of sickness.

108. A very great increase has taken place in the rate of mortality. Mortality.

The average number of deaths during the previous six years is 43 or 14·7 per mille; there has therefore been an increase of 16·7 per mille. During 1865 it was 20·5, but during none of the previous years does the death-rate ever ascend so high. The year 1860 was a sickly period, but it had not such a high rate of mortality as shown above.

The admissions and deaths from cholera have been 15, or 5·6 per mille. The severity of the attacks may be judged of from the fact, that every case which occurred was fatal.

The rate of mortality from this disease is 4·6 per mille above the average, while the admissions are only 2·7 above it. It is to be seen that the past year shows an unusual amount of sickness and mortality from ordinary disease, the latter being quite out of proportion to any other division of the army.

As the station of Secunderabad is the only one garrisoned by Europeans in the Nizam's Territory, the diseases which have made up the above return are considered below.

Of the deaths from cholera, three occurred in a party of 20 men of the 2-21st, who left Ramandroog *en route* to Secunderabad on the 13th of August; five were attacked, and three died on the road; one was left at Secunderabad and the other at Kurnool.†

SECUNDERABAD AND TRIMULGHERRY.

109. The European troops composing the Hyderabad Subsidiary Force are all nominally stationed at Secunderabad, but in reality a large number of them are quartered in the new Cantonment of Trimulgherry which is distant about three miles from the old one. Eventually all the European force will be located at

* The difference between this figure and those shown in the stational return is, that some of the deaths from cholera occurred amongst troops marching. Three deaths out of hospital appear to have been omitted in the divisional return.

† *Vide* Memo. from officer commanding Ramandroog, dated 17th November 1866.

at Trimulgherry, as described in the sanitary report on this station by the late Sanitary Commission. This arrangement is being carried into effect as quickly as new barracks can be built.

During the past year, the different corps have been located as follows :—

Secunderabad.

D. Battery, D. Brigade, Royal Horse Artillery, Begumpet Barracks.
No. 5 Battery, 20th Brigade, Royal Artillery, Bomb-proof Entrenched Barracks.
Her Majesty's 18th Hussars, Old European Infantry Barracks.

Trimulgherry.

B. Battery, 14th Brigade, Royal Artillery - in two blocks, 1st East India barracks.
D. Battery, 23rd Brigade, Royal Artillery - Half Company Barracks, North Trimulgherry.
Her Majesty's 2nd battalion, 21st Fusiliers - Company Barracks, 1st East India.
Her Majesty's 108th Regiment - - - Half Company Barracks, 2nd East India, South Barracks.

The sickness and mortality are first considered for the whole station, and afterwards the sickness in the old and new cantonments is contrasted separately.

The average strength, &c., of the force shown in the above Divisional Return includes "troops marching"* during the year; the Stational Returns for Secunderabad will differ from it to a certain extent, notwithstanding that it is the only cantonment in the division.

* 1st Dragoon
Guards, B. 23rd
R. A.

Sickness and
mortality.

110. The average strength of the whole force in quarters amounts to 2,577. The total admissions 3,938, the daily sick 200·8, and the deaths in hospital to 84, and three outside; 187 men were invalided, or at the rate of 72·5 per mille.

Contrast with
other stations.

111. Compared with nine other stations of the Madras army, it stands sixth on the list as regards its rate of admissions, these being 1541·3 per mille; it is seventh on the list as regards its daily sick, which is 77·9 per mille, and as to the mortality rate it is higher than any other station of its class in the army, being no less than 32·5 per mille in hospital, and 1·1 per mille out of hospital.

Admissions.

112. An examination of Tables II. and VII., Appendix, pages 174 and 177, shows the admissions from different classes of diseases to have been as follows:—

Zymotic diseases (2,563) have been admitted at the rate of 994·5 per mille of strength, but are not very much out of proportion to other stations in the army; Kamptee, Bellary, Rangoon and Fort St. George show a higher rate of admissions from this cause. The constitutional class gives 53 admissions, or 20·5 per mille; local affections 1,004 or 389·6 per mille; developmental 34, or 13·1 per mille, and violent diseases 318 or 123·3 per mille.

An examination of Table VII. Appendix, page 177, shows local diseases to be below the average of other stations generally, and that violence and developmental diseases are neither of them very much in excess.

As regards the Zymotic class, 1,817 have been miasmatic, 634 venereal, 46 dietetic, and 66 parasitic diseases.

The only class of disease which shows a higher proportion of admissions than the other stations of the army, has been the last named, which has been made up of cases of Guinea worm; these amounted to 58. More than one-half occurred in the fourth quarter of the year.

It may be said therefore that this station, although it has shown a greater proportion of admissions during 1866 over previous years, is not remarkable as to its preponderance of sickness over other stations of the army.

The daily average sickness is certainly high, and this is noticed more in detail when contrasting the sickness of the old and new cantonments.

Special diseases.

113. The principal diseases which have made up the miasmatic order, were cases of dysentery 470, diarrhoea 342, intermittent 278, remittent 58, continued fevers 277, rheumatism 138, ophthalmia 75, and hepatic diseases 184.

Thirty-eight

Thirty-eight cases of drunkenness, and five of delirium tremens have been treated. It must also be noted that six cases of typhus, and three of typhoid fever have been admitted.

Fifteen admissions and 12 deaths have occurred from cholera, which gives a higher proportion of deaths than any other station, excepting St. Thomas' Mount.

114. The admissions from venereal diseases are, as might be expected, high, namely 634, but not more so than at many other stations of the army; their rate per mille is 246, which, compared with some other places, is low, such as St. Thomas' Mount, Fort St. George, Kamptee, &c. Venereal disease.

The rates of admissions from dysentery, diarrhoea, and hepatic diseases, are all high, as compared with other stations; the first stands at the rate of 182 per mille.

Although the admission-rate is not altogether high as compared with the rest of the army, the type of the disease, as shown by the very high rate of mortality, has been severe.

115. The deaths have taken place from the following orders and classes of disease: miasmatic 45, tubercular 5, circulatory 7, respiratory 2, digestive 14, atrophial 1, and 10 from accidents. Mortality.

Of the above, 16 deaths occurred from dysentery, 12 from cholera, 14 from hepatic disease, 5 from diarrhoea, 8 from intermittent, remittent, and continued fevers. Respiratory diseases and typhoid fever contribute each two, and rheumatism one.

Of the accidents, eight were from sun-stroke, and two from drowning.

In contrasting the salubrity of the old and new cantonments, a few brief remarks as to the different conditions under which the troops are quartered, will be of interest while examining the Statistical Returns.

116. Secunderabad, or the old cantonment, is situated about six miles from the city of Hyderabad with a large and crowded bazaar on its southern side. Secunderabad barracks.
The barracks in which the European troops are quartered are—

1st. The old European Infantry barracks.

2nd. Begumpet barracks.

3rd. The Bomb-proof barracks within the entrenchment.

The first are so well known as to require no fresh description here, as their site and present construction are fully described in the Sanitary Report on this station by the late Madras Sanitary Commission. The barracks themselves have of late been much improved, and, if not overcrowded, there is no particular fault to be found with them, but the site is particularly bad and cannot be improved materially. Her Majesty's 18th Hussars have been quartered in these during the past year, and Her Majesty's 17th Lancers and King's Dragoon Guards have occupied them since 1860, which latter corps were always considered healthy.

The Begumpet barracks are occupied by the Horse Artillery: the site is a very fine one, but the barracks are very bad—one block being nothing more than the place of arms of a native regiment.

The barracks adjoining were occupied by a field battery, but were left empty on its removal from Secunderabad in the end of 1865. This site is bad from its proximity to low swampy ground.

The remaining barracks are the old bomb-proof barracks within the entrenchment. They were built for two batteries, but only one garrison company of artillery is now quartered in them. The site is good, and the barracks have always been healthy. In fact, the defects of the barracks are counterbalanced to a great extent by the large amount of space each man gets.

117. The new cantonment of Trimulgherry stands about three miles to the north, on fine open ground on the Bolarum-road. Its elevation is good, and its natural drainage excellent. Trimulgherry barracks.

It is on a much higher elevation than the old cantonment, and in every way superior to it in a sanitary point of view.

As regards the barracks in which the troops are quartered, it may be said generally that they are all of the very finest description, and although they do not all combine the principles which are now recognised as essential features of

barrack architecture, still they are lofty, airy, well-ventilated buildings; and those which have been built within the last two years are, as far as possible, strictly according to the principles which have been laid down in Colonel Crommelin's plans, and which have received the sanction of the Supreme Government.

It is sufficient here then to state, that the troops quartered at Trimulgherry are living under better sanitary conditions than those in the old cantonment; the result of them on their respective returns are shown by the following Tables.

Comparative salubrity of old and new cantonments.

118. The comparative salubrity of the troops quartered in the new barracks and those in the old cantonment at Secunderabad is strikingly shown in the following Table, which has been compiled from the annual report by Surgeon Major Ranking for 1864.

Rate per Mille of Strength.	Secunderabad.		Trimulgherry.	
	1860-63.	1864.	1860-63.	1864.
Admissions - - - - -	1837.5	1573.7	1259.2	1549.6
Deaths - - - - -	23.4	13.71	12.04	7.61

So much for past years, and it is gratifying to be able to show that during the year 1866, the comparative salubrity of the two stations is still more favourable to the sanitary reputation of the new cantonment.

	Secunderabad.				Trimulgherry.			
	Strength 717.		Ratio to Strength per Mille.		Strength 1860.		Ratio to Strength per Mille.	
Admissions - - - - -	1421		1981.8		2517		1353.2	
Daily Sick - - - - -	65.3		91.3		135.3		72.7	
Deaths in Hospital - - - - -	31		43.2		48		25.8	
Deaths out of Hospital - - - - -	1		1.3		2		1.0	
<i>Special Diseases.</i>	A.	D.	A.	D.	A.	D.	A.	D.
Intermittent Fever - - - - -	95	1	132.4	1.3	180	1	96.7	0.5
Remittent Fever - - - - -	40	2	55.7	2.7	17	1	9.1	0.5
Continued Fever - - - - -	187	3	260.8	4.1	90	-	48.3	-
Typhus Fever - - - - -	1	-	1.3	-	5	-	2.6	-
Typhoid Fever - - - - -	1	-	1.3	-	2	1	1.0	0.5
Small-Pox - - - - -	-	-	-	-	1	-	10.5	-
Dysentery - - - - -	68	4	94.8	5.5	402	10	76.1	5.3
Diarrhoea - - - - -	197	1	274.7	1.3	139	3	4.7	1.6
Cholera - - - - -	7	7	9.7	9.7	8	6	4.3	3.2
Ophthalmia - - - - -	26	-	36.2	-	49	-	26.3	-
Rheumatism - - - - -	42	1	58.5	1.3	95	-	51.0	-
Ebriositas - - - - -	11	-	15.3	-	23	2	12.3	1.0
Delirium Tremens - - - - -	2	-	2.7	-	3	-	1.6	-
Hepatic Diseases - - - - -	64	1	89.2	1.3	119	7	63.9	3.7

From these figures, we observe that the rate of admissions into hospital has been 628.6 per mille lower in the new than in the old cantonment, the daily average sick 18.6 per mille less, and the rate of mortality 17.4 per mille less. The death-rate at Trimulgherry has been very high as compared with other stations of the army, but that of Secunderabad is strikingly great.

Both cantonments appear to have suffered from some peculiar atmospheric influences, which are considered in another portion of this report; but this striking disparity in the healthiness of the two cantonments ought to be sufficient to convince the most sceptical that sanitary improvements have benefitted the British soldier in a most tangible form at this our largest military station.

119. The following Table shows the rate of sickness and mortality in the different barracks at Secunderabad and Trimulgherry. Comparative salubrity of different blocks of barracks.

	SECUNDERABAD.						TRIMULGHERRY.					
	Begumpet.		Bomb-proof Barracks.		Old European Infantry Barracks.		Company Barracks, North Trimulgherry.		1st European Infantry Barracks.		2nd European Infantry Barracks.	
	B. D. Brigade, Royal Horse Artillery.		No. 5, 20th Brigade, Royal Horse Artillery.		Her Majesty's 18th Hussars.		D. 23rd Brigade, Royal Horse Artillery.		Her Majesty's 2nd Battalion, 21st Fusiliers, and B. 14th Brigade, Royal Horse Artillery.		Her Majesty's 108th Regiment.	
	Strength 128.	Ratio to Strength per Mille.	Strength 79.	Ratio to Strength per Mille.	Strength 476.	Ratio to Strength per Mille.	Strength 161.	Ratio to Strength per Mille.	Strength 826.	Ratio to Strength per Mille.	Strength 856.	Ratio to Strength per Mille.
Admissions - -	226	1765.6	69	873.4	1096	2302.5	221	1372.6	1089	1318.4	1188	1387.8
Daily sick - -	9.6	75.0	3.2	40.5	51.5	108.1	9.5	59.0	58.8	71.1	67.2	78.5
Deaths in hospital -	4	31.2	1	12.6	25	52.5	3	18.6	19	23.0	24	28.0
Deaths out of hospital	1	7.8	-	-	-	-	-	-	1	1.2	-	-

From this it will be observed that the old European Infantry barracks stand first on the list for giving the highest rate of sickness and mortality, the latter being no less than 52.5.

In considering this rate of sickness, it must be remembered that the regiment occupying them has only lately arrived in the country, and most of the men are young soldiers.

In looking over the above Table and comparing the mortality from the different barracks, and their rates of admission into hospital, the order of their salubrity, as judged of from these figures, is precisely that in which the sanitary officer would arrange the relative advantages of the sites on which these barracks are built.

The site of the bomb-proof barracks has often been described as the very best that could be selected, and this, together with the amount of space enjoyed by the men of No. 5-20th Brigade, Royal Artillery, has had its share in placing it first on the list.

Of the barracks at Trimulgherry, the least salubrious during the past year has been the 2nd European Infantry barrack, and there can be but one opinion that the site of these is the worst in the new cantonment. The following extract is taken from the Report on Secunderabad by the late Sanitary Commission, and points to the urgency of proper draining, not only in this, but in several other portions of the cantonment.

“The lines of this corps are situated at the southern portion of the Trimulgherry cantonment, and extend southwards *en echelon* from the general hospital on a ridge of ground which slopes away to the south, where it ends in a valley under wet cultivation, by which it is separated from the lines of the 32nd Regiment in the old cantonment. The ground upon which the barracks are built is very irregular in many places, and for this reason the ground available for building is very much confined in some parts. On each side of this ridge the ground is low and marshy, from the drainage being obstructed in the valley just alluded to for the purposes of wet cultivation. This marshy ground separates the barracks from a range of hills on the east, and the Bolarum-road on the west. The medical officer of this corps informs us that he is convinced that the vicinity of this low ground has not been without an unfavourable influence on the health of the men during the past year, and there can be little doubt that it is very desirable that these tracts of land should be drained and cultivated.”

NAGPORE DIVISION.

120. The stations in this Division at which British troops are located are—

Kamptee—Seetabuldee—Chindwarrah.

Sickness and mortality.

The average strength of the European force serving in this Division made up by the corps as per margin has been 1,166. The total admissions have been

Royal Artillery.
1 Company E.I. Drivers.

H. M.'s 1st Royal Regiment. 2,062; the daily average sick 76·2, and the total deaths 22; four of these occurred out of hospital; 121 men have been invalided.

Sickness and mortality of previous years.

121. The following statement shows the sickness and mortality in this Division as contrasted with former years :

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1741·6	1432·8	1872·5	1647·8	2011·5	1724·4	1740·0	1768·4
Daily sick - - -	67·9	49·6	56·1	45·1	64·6	60·7	57·3	65·3
Deaths - - -	22·1	10·2	25·8	12·9	23·8	23·4	19·6	15·4
Admissions from cholera -	30·2	0·7	12·9	3·8	20·9	12·1	12·9	·8
Deaths from cholera -	12·1	-	10·3	0·7	9·3	9·0	6·7	·8
Average Strength - -	991	1266	1161	1309	1383	1321	1238·5	1166

It will be observed that, as in other divisions of the army, the average strength is reduced during the present year, as compared with the average of six past years.

The rate of sickness, both as shown by the admission and daily sick, has slightly increased on former periods.

The mortality rate, on the other hand, is lower than that for 1865, and the average for the last six years.

The admissions and deaths from cholera have been each ·8 per mille, while the average is 12·9 and 6·7 per mille respectively, thus showing a lower rate from this disease than in any previous year, excepting 1861, as regards admissions, and 1863 as to mortality.

Admissions.

122. The sickness from intermittent fever has been remarkably high during the past year, there having been 669 admissions from this cause, being more than a third of the total diseases, or 573·7 per mille. Venereal disease comes next, 375 men having been admitted, or 321·6 per mille. Rheumatism contributes 103, and diarrhoea 69. The admissions from other diseases appear to have been comparatively small.

Mortality.

123. As regards the mortality, there have been five deaths from hepatitis, three from phthisis, two from sunstroke, and one from each of the following causes: dysentery, diarrhoea, cholera, delirium tremens, laryngitis, suicide, dementia, subluxatio, and a death out of hospital, the cause of which is not recorded in the quarterly return.

KAMPTEE.

Sickness and mortality.

124. The strength of this station, made up by the troops as per margin, has been 1,042, being the third largest station in the Madras Presidency.

Royal Artillery.
1st Royal Regiment.
1 Company East
Indian Drivers.

The total admissions into hospital from all diseases have amounted to 1,742; the daily average sick, 62·7; and the deaths, 17, four of which occurred out of hospital; 121 men have been invalided during the year.

Contrast with other stations.

125. Compared with nine other stations of the Madras army, whose strength exceeds 450 men, Kamptee stands seventh on the list as regards the rate of admissions, which is 1671·8 per mille. Its rate of daily average sick has been 60·2, standing fourth on the list as regards this element. The mortality rate is 12·4, being made up of deaths which occurred in hospital; and 3·8 is the ratio of deaths out of hospital. This station stands fourth on the list as regards its death-rate, which may be considered low.

126. Out of 1,742 total admissions recorded above, 1,167 are of the zymotic class, and 428 local. Of the former, 839 are miasmatic diseases, and 290 venereal affections. Admissions.

The miasmatic diseases have been to a great extent made up by the numerous admissions from intermittent fever which have characterised the division of the army to which this station belongs.

These have amounted to 582 cases, or more than double those of any other station in the army. Rheumatism contributes 73, diarrhoea 51, hepatic disease 67, dysentery 26. Excepting rheumatism and hepatic disease, the rate of admission is low.

127. The mortality has been made up of the following diseases: intermittent fever, three; and hepatitis, diarrhoea, cholera, phthisis, laryngitis, insolation, dementia, and subluxatio have each contributed one death. Mortality.

Of the four deaths which have occurred out of hospital, one death occurred in the B. 14th Royal Artillery: the name of the disease has not been given.

In the second quarter a man was found dead in the barrack of Her Majesty's 1st Royals from insolation, and another man doing duty with Her Majesty's 1st Royals was brought to hospital from apoplexy. The fourth death was a case of suicide by hanging, in the C. 14th Royal Artillery.

SEETABULDEE.

128. This station is situated about 12 miles from Kamptee, and is garrisoned by detachments from regiments quartered there, which during the past year have been composed of the European troops as per margin. Their average strength has been 65. The total number of admissions from all causes has been 137; the daily sick 5, and the deaths 2. Sickness and mortality.
Detachments.
H. M.'s 1st Royal Regiment.

129. Compared with eight other stations, whose strength is under 450, it stands last but one on the list as regards its rate of admissions, and seventh with respect to mortality, the former amounting to 2107·7, and the latter 30·7 per mille. Contrast with other stations.

Its daily average sick is higher in proportion than any other, being 78 per mille, and it stands last on the list as regards this element.

130. The admissions into hospital have been 78 from the miasmatic order of disease, 28 from venereal causes, and 17 from the local class. Admissions.

Intermittent and continued fevers contribute 49 to the miasmatic order, dysentery and diarrhoea 15, and rheumatism 10.

Five admissions occurred from hepatic disease.

131. The two deaths were made up of a case of dysentery and one of phthisis. Mortality.

CHINDWARRAH.

132. This station, like that of Ramandroog, is now used as a sanitarium for the troops at Kamptee, and is noticed in another portion of this report when treating specially of sanatoria and depôts. Sickness and mortality.
Royal Artillery.
1st Royals.

The average strength of this station has been 61. The total admissions during the year have been 163; the daily sick 8·8, and the deaths 3.

133. The admissions have been made up of—zymotic diseases, 119; constitutional, 4; local, 37; and violence, 3. Of the first, 64 are of the miasmatic order, and 54 from venereal disease. As at Kamptee, the miasmatic diseases have been chiefly due to cases of intermittent fever. Admissions.

134. The deaths have consisted of two cases of hepatitis and one of phthisis. Mortality.

PEGU DIVISION.

135. The following is a list of stations composing this division:—

Rangoon.
Thayetmyoo.
Tonghoo.

Sickness and mortality.
Royal Artillery.
H. M.'s 2-24th Regiment.
H. M.'s 2-19th Regiment.

The average strength of the troops serving in this division, as per margin, has been 1,741; the total admissions into hospital have been 2,555; the daily sick 112·4, and the total deaths 32. Twenty-three of these occurred in 1864, and the total deaths 32. Twenty-three of these occurred in hospital; and of the nine which occurred out of hospital, one took place at Fort Blair, and is included in the divisional return for the fourth quarter, although the detachment from the 2-24th Regiment at this place does not appear to have been included in the strength of the quarterly returns.

There have been five admissions and two deaths from cholera in this division during the year.

Sickness and mortality of previous years.

136. The following statement shows the rates of sickness and mortality in this division for six previous years :

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	1289·3	1188·2	983·3	940·0	1247·0	1400·6	1168·5	1467·5
Daily sick - - -	63·2	63·5	51·1	48·2	57·0	58·6	57·1	64·5
Deaths in hospital - -	8·3	6·3	10·8	20·0	20·2	23·2	14·2	13·2
Admissions from cholera - -	-	·4	1·3	18·0	2·6	4·5	4·2	2·8
Deaths from cholera - -	-	·4	·4	10·5	1·5	2·2	2·4	1·1
Average Strength - -	2160	2359	2221	2000	1923	1767	2071·6	1741

From this Table it will be observed that the average strength of the troops quartered in the Pegu Division of the army has been steadily decreasing year by year since 1860, till during the last it is 330 below the six-year average.

With this decrease in the average strength there has been a slight rise in the number of admissions into hospital and daily average sick, and a decrease of one per mille in the rate of mortality. Cholera has been less prevalent in the division for the past year. It will be observed that the rate of mortality is considerably lower than has been the case in this division during the past three years, 1863, 1864, and 1865, when the average was 21 per mille. For the first of these years the high death-rate was caused by the large number of deaths from cholera (10·5 per mille).

The deaths in hospital in 1860, 1861, and 1862, are remarkably low, these being at the rate of 6·3 per mille in 1861.

Admissions.

137. The diseases which have chiefly made up the admissions into hospital are venereal diseases, 378; continued fever, 350; diarrhœa, 139; dysentery, 195; and hepatic diseases, 94. The first two of these diseases make up little less than half the total admissions.

Venereal diseases stand at the rate of 217 per mille, and are not higher than many other divisions of the army. The admissions, however, from continued fever are remarkably high, and quite out of all proportion to the admissions from this disease in any other division of the army, being at the rate of 201 per mille of strength. They were chiefly admitted from the regiments serving in Rangoon, and receive further notice when remarking on that station.

The admissions from fever of the intermittent type are lower than in any other division, being at the rate of 27·5 per mille. Bowel complaints are high; hepatic affections are low.

Mortality.

* Exclusive of insolation.

138. The mortality has been made up by dysentery, 8; continued fever, 4; wounds* and accidents, 4; cholera, intermittent fever, hepatic disease, atrophica and death from heat, each 2; and phthisis, 1.

One admission and death took place from typhoid fever, and four from other causes.

The deaths out of hospital amount to nine, and are higher than in any other division; this is particularly observable in Rangoon and Tonghoo, and receive notice under those stations; they are made up, amongst other diseases, of sun-stroke, drowning, and fracture.

RANGOON.

Sickness and mortality.
H. M.'s 2-24th Regiment.
Royal Artillery.

139. The average strength of this station for the past year composed of the troops, &c., as per margin, has been 693.

The total number of admissions into hospital has been 1,341; the daily average

average sick, 60·5 ; and the mortality, 118 ; six of the deaths have occurred out of hospital. Forty-seven men have been invalided.

140. Comparing this station with nine others garrisoned by European troops serving in the Madras Presidency, it stands last but one on the list as regards admissions into hospital, which are at the rate of 1935·1 per mille. The daily average sick is also very high, being highest of any excepting Fort St. George, viz., 87·8 per mille. As regards its death-rate, it stands eighth on the list, this having been 17·3 per mille in hospital, and 8·6 outside.

Contrast with other stations.

Excepting Fort St. George, the admissions from zymotic disease are higher than any other station in the Presidency, being at the rate of 1207·7 per mille, and the deaths which have occurred are, with one exception, due entirely to this class of disease, being at the rate of 17·3 per mille.

These admissions from zymotic disease are made up of 585 miasmatic, 246 venereal, and 4 cases of drunkenness. The 12 deaths are all from the first class.

141. The diseases which have made up this very large amount of sickness are chiefly found in cases of continued fever, 323 ; there having been only 10 admissions from fever of an intermittent type, and 1 remittent.

Admissions.

The admissions from continued fever are at the rate of 466 per mille, and, as an examination of the returns will show, are far above any other station of the army, not even excepting Fort St. George. It is stated, however, by the staff assistant surgeon doing duty with the 2nd battalion 24th Regiment, "that the number of admissions from continued fever during the year 1866 was attributable to the undue exposure of the men to the excessive heat and damp of this climate, from their ignorance of the pernicious effects of such influence, shortly after their arrival at this station ;" and further, "that nearly all these cases, although classed under the head of continued fever, was not really fever of that type, but of an ephemeral character ; and as the nosological table does not contain this latter designation, no alternative was left but to class it under the head of continued or intermittent fever, the former of which was preferred."

There having been four cases of drunkenness and two of delirium tremens leads to the suspicion that many of these cases are probably due to the facility with which our troops can obtain liquor at a seaport town.

142. The rate of admissions from venereal disease is remarkably high, being at the rate of 354 per mille.

High rate of venereal disease.

The admissions from dysentery, 116, have been high also. Those from diarrhoea have been 57, and from hepatic diseases 47 ; other diseases generally have been comparatively low.

143. The mortality which has been entirely amongst diseases of the miasmatic order has been as follows :—Dysentery, 4 ; continued fever, 4 ; intermittent fever, 2 ; and typhoid fever, 1.

Mortality.

The deaths out of hospital have been from fracture, phthisis, drowning and sunstroke.

THAYETMYOO.

144. The average strength of this station made up by the troops, as per margin, has been 565. The admissions have been 570. The average daily sick, 27·3 ; and the mortality, 12 ; out of which three deaths occurred out of hospital ; 38 men have been invalided.

Sickness and mortality.

Royal Artillery. Left wing 2-19th Regiment.

145. This station, as compared with the other stations of the Madras Presidency, where large bodies of European troops have been cantoned, stands next to Bangalore, or second on the list as regards salubrity, both as to its number of admissions into hospital and its average daily sick, these being at the rate of 1008·8 and 48·4 per mille respectively.

Contrast with other stations.

As regards its death rate it stands rather low, being sixth out of the ten stations whose average strength is above 450 men. The mortality in hospital has amounted to 15·9 per mille, and 5·3 per mille outside.

146. It is a fact to be noticed, that in this station and at Rangoon the deaths out of hospital are greater than at any other station in the Presidency.

Mortality out of hospital.

Admissions.

147. The admissions at this station have been made up by 247 cases of the zymotic class; 5 constitutional, 229 local, 16 developmental, and 73 violence.

The rate of admissions from the first class of diseases, which is generally so high at our other stations, is in this case singularly low, being at the rate of 437 per mille of strength. No station of its class, excepting Bangalore, has shown so low a rate. On the other hand, diseases of the local class are high.

The zymotic class has been made up of 142 miasmatic, 83 venereal, 6 dietetic, and 16 parasitic diseases. Of the local class, digestive contributes 106.

The principal diseases have been—diarrhoea, 39; intermittent fever, 26; dysentery, 17; continued fever, 13; rheumatism, 13; and hepatic diseases, 12; all of which are comparatively low.

Cholera contributes four cases and two deaths.

Venereal disease has amounted to 146 per mille, which is comparatively low.

Out of the nine deaths, cholera contributes 2; asthenia, 2; dysentery, 1; ebriositas, 1; and abscess, 1.

Mortality.

148. The following deaths occurred out of hospital;—Rupture of a blood vessel and two deaths from sun-stroke.

A case of phthisis died at Poonamallee, which is included in the quarterly return for Bangalore.

TONGHOO.

Sickness and mortality.

Royal Artillery.
Right wing H. M.'s
2-19th Regiment.

149. The strength of this station for the last year made up of the troops, as per margin, has been 450. The admissions into hospital have been 630; the daily sick 24·8, and the mortality 2.

Two men have been invalided.

This station takes a high place amongst the other stations of the army, both as regards sickness and mortality.

Contrast with other stations.

150. Compared with nine other stations, it stands third on the list as regards the rates of admission and daily sick in hospital, these elements being 1,400 and 55·2 per mille, respectively.

Bangalore and Thayetmyoo are the only stations above it.

With regard to its death rate it stands first on the list, and has the lowest death-rate of any station in the Presidency, this having been for the past year only 4·4 per mille, being just one-third that of Bangalore, which may be considered one of the most salubrious stations in the Presidency.

Admissions.

151. The admissions at this station have been as follows: zymotic disease contributes 300, constitutional 6, local 260, developmental 32, and violence 32.

Excepting Bangalore and Thayetmyoo, the rate of admissions from zymotic disease is lower than in any other station whose average strength exceeds 450, and consists of 245 cases of miasmatic disease, 48 venereal, 2 dietetic, and 5 parasitic diseases.

The principal diseases have been—dysentery 57, and diarrhoea 42, which are both high, comparatively. Remittent fever is high, 44; hepatic diseases also stand high, 31.

There has been no admission from cholera.

It is worthy of note that this and the former station stand highest on the list of all the stations of the army for their rate of admissions from diseases of nutrition (atrophia).

Mortality.

152. Of the two deaths, one is from hepatic disease and the other from enteritis.

PORT BLAIR.

Sickness and mortality.

153. The average strength of this station, which has been garrisoned by a detachment from the 2-24th Regiment, Rangoon, has been 109. The total admissions have been 173, the daily sick 5·4, and the deaths 1.

Contrast with other stations.

154. Compared with eight other stations, it stands seventh on the list, both as regards its rate of admissions and daily average sick, which are at 1587·1, and

and 50 per mille respectively. It stands third on the list as regards its death-rate, which is low, being only 9·1 per mille.

155. The admissions from zymotic disease are high comparatively, being 81, or at the rate of 743·1 per mille. Of these, 75 are from miasmatic causes, and six venereal. Thirty-one of the former are cases of intermittent fever, 10 dysentery, 13 diarrhoea, 15 rheumatism, and 5 ophthalmia. Hepatic disease shows 19 admissions, which with the former are all comparatively high. Admissions.

156. The only death was from hepatic disease.

Mortality.

S T R A I T S.

SINGAPORE.

157. The average strength of the troops at this station, made up of the troops as per margin, has been 136. The total admissions have been 179; the daily average sick 6·3, and the deaths 1. Sickness and mortality.
Royal Artillery.

Two men have been invalided.

158. Compared with other stations whose strength is under 450 men, it stands half-way down the list as regards its rate of admissions and daily sick, which have been 1,316·1 and 46·6 respectively. Its death-rate is low, this being 7·3 per mille, and with the exception of Mulliapooram, the first on the list of its class, and next to Tonghoo as regards the mortality of all the stations in the army. Contrast with other stations.

159. The admissions from zymotic disease have been 76, local 66, violence 36, and constitutional 1. Of the first, 53 are miasmatic complaints, 17 venereal, and 6 diet c. Admissions.

The principal diseases have been—intermittent fever, 10; diarrhoea, 9, and hepatitis, 9, which are not high comparatively with other stations.

There has been no cholera.

160. The only death has been from tubercular disease.

Mortality.

PENANG.

161. The average strength of this station composed of the troops as per margin has been 74. The admissions have been 160; the daily sick 5·3, and the deaths 2. Sickness and mortality.
Royal Artillery.

162. Compared with eight other stations of the army whose strength is under 450, it stands lowest on the list as regards its rate of admissions, which is 2,162 per mille. It is last but one as regards its daily sick (72·5 per mille), and its mortality is also comparatively high, being 27 per mille, and sixth on the list in this respect. Contrast with other stations.

163. Zymotic disease has, as usual, been the chief cause of this increased admission rate. Miasmatic diseases have contributed 62, venereal 17, and dietetic 4 cases. Of the first, 29 have been cases of intermittent fever, 10 rheumatism, and 9 ophthalmia. Four admissions only have taken place from diarrhoea, and only one from dysentery. Admissions.

The admissions from accidents stand at a higher rate than in any other station, being 23, or 310 per mille.

Local diseases, made up chiefly of respiratory, digestive and integumentary affections, stand high, being 52, or 702·7 per mille.

164. One death has occurred from nervous and another from tubercular disease. Mortality.

Sickness and mortality in each division contrasted.

165. The following statements show the amount of sickness and mortality in each division of the army, British troops, for the past year, contrasted with that of six previous years :—

Rate per Mille of Strength.	ADMISSIONS.							
	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Pegu Division - - - -	1289.3	1188.2	983.3	940.0	1247.0	1400.6	1168.5	1467.5
Mysore Division - - -	1226.0	1322.2	1029.9	1103.3	1247.2	1192.6	1198.0	927.1
Ceded Districts - - - -	1099.8	1458.2	1400.0	1062.6	1693.9	1352.4	1354.0	1777.2
Southern Division - - -	1150.0	1250.1	2125.6	1398.9	1638.3	1428.1	1441.1	1752.4
Hyderabad Subsidiary Force -	1960.8	1534.9	1090.0	1164.9	1586.5	1503.2	1479.1	1516.4
Northern Division - - -	1960.0	1181.0	1433.9	2059.7	2123.5	500.0	1696.8	363.6
Nagpore Force - - - -	1741.6	1432.8	1872.5	1647.8	2011.5	1724.4	1740.0	1768.4
Centre Division - - - -	2314.2	1580.8	1786.5	1604.1	1800.5	1870.6	1809.4	1852.7

DAILY SICK.

Northern Division - - -	59.3	37.0	45.9	73.1	75.2	1.7	54.8	12.7
Pegu Division - - - -	63.2	63.5	51.1	48.2	57.0	58.6	57.1	64.5
Nagpore Force - - - -	67.9	49.6	56.1	45.1	64.6	60.7	57.3	65.3
Mysore Division - - - -	68.3	72.9	61.7	49.7	51.3	49.4	58.3	43.5
Hyderabad Subsidiary Force -	71.9	63.1	48.6	58.1	64.6	69.2	62.3	76.2
Southern Division - - -	59.3	50.3	100.7	59.3	77.6	59.2	65.1	95.6
Ceded Districts - - - -	44.2	56.8	66.2	57.3	89.2	77.4	66.1	82.2
Centre Division - - - -	85.8	84.1	95.1	81.0	85.8	86.0	86.0	91.4

DEATHS IN HOSPITAL.

Mysore Division - - - -	9.0	13.1	7.9	11.4	10.7	12.5	10.8	11.9
Pegu Division - - - -	8.3	6.3	10.8	20.0	20.2	23.2	14.2	13.2
Hyderabad Subsidiary Force -	19.8	13.0	12.7	13.0	9.2	20.5	14.7	31.4
Southern Division - - -	17.9	15.8	13.7	16.9	17.0	13.8	15.9	25.7
Ceded Districts - - - -	9.4	9.0	26.7	14.4	14.6	27.0	17.2	10.0
Nagpore Force - - - -	22.1	10.2	25.8	12.9	23.8	23.4	19.6	15.4
Northern Division - - -	10.7	45.2	18.8	29.8	29.6	-	25.6	-
Centre Division - - - -	34.8	24.0	30.0	24.8	35.7	27.7	29.2	34.2

Leaving out the Northern Division, which from its extremely small number of troops is of no use as an element of comparison, it will be observed from this Table that the Mysore Division stands first for the past year in order of salubrity out of all the other divisions, excepting as regards its rate of mortality, in which it stands second to the Ceded Districts.

Taking the average for six years, we find the Pegu Division stands very high as regards its comparative salubrity, a position which it retains during the past year, one in which the public health was exposed to unusually unfavourable circumstances.

The Centre Division, as might be expected, stands lowest with regard to admissions and deaths, and last but one in respect to daily sick, on account of its having within its limits the Poonamallee Depôt, and from being the coast sanitarium of the Presidency.

166. The following Table shows the rates of admissions and deaths from each of the principal diseases which have been admitted into hospital in each of the divisions during the past year.

Sickness and mortality from special diseases in each division.

	Dysentery, Acute.		Dysentery, Chronic.		Diarrhoea.		Febris, Intermittent.		Febris, Continued.		Rheumatism.		Venereal Diseases.		Hepatitis, Acute.		Hepatitis, Chronic.		Cholera.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Centre Division - -	46.8	3.7	84.0	3.7	114.4	0.7	60.9	-	17.9	1.4	80.2	-	383.6	-	50.5	0.7	113.0	0.7	9.6	3.7
Southern Division - -	33.6	1.9	27.7	1.9	89.1	-	241.5	-	-	-	65.3	-	233.6	-	69.3	1.9	61.3	-	11.8	3.9
Mysore Division - -	47.5	1.4	14.4	0.3	82.3	-	36.9	-	46.8	-	27.4	-	129.5	-	19.0	1.7	27.8	1.0	2.1	1.0
Ceded Districts - -	83.5	1.1	28.9	2.2	189.3	-	81.2	-	106.9	-	55.5	-	243.8	-	31.1	1.1	17.8	1.1	1.1	-
Northern Division - -	-	-	-	-	-	-	90.9	-	-	-	-	-	90.9	-	-	-	-	-	-	-
Hyderabad Sub-Force -	169.4	5.6	18.7	0.3	129.7	1.8	109.5	0.7	118.5	1.4	55.7	-	242.7	-	62.8	3.3	20.9	1.8	5.2	5.2
Nagpore Force - -	17.1	0.8	8.5	-	59.1	0.8	573.7	2.5	18.0	-	88.3	-	321.6	-	27.4	0.8	43.7	3.4	0.8	0.8
Pegu Division - -	78.6	2.2	33.3	2.2	79.8	-	27.5	1.1	201.0	2.2	28.1	-	217.1	-	29.2	1.1	24.6	-	2.8	1.1

167. The admissions from this order of zymotic disease amounts to 6,762, and the deaths 110; the latter element makes up just one-half the mortality that has occurred in the hospitals of this Presidency, and the admissions make up more than one-half of the diseases which have been admitted.

Miasmatic diseases.

168. The following Table shows the prevalence of miasmatic disease in the army during 1866, as compared with previous periods :—

Contrast with previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	687.4	527.1	489.0	461.6	576.4	551.4	549.1	594.3
Deaths - - -	7.8	6.7	6.1	7.0	8.6	9.7	7.6	9.6

This Table shows a slight increase in the sickness and mortality from this order of disease on former periods, and is not easily to be accounted for when it is considered that the past year has been one of comparative freedom from epidemic cholera. It is to be seen that, excepting the year 1860, there is a greater number of admissions than in any other, and that the rate of mortality is higher than in any previous year.

The average number of admissions during the previous six years amounts to 7,148, and the deaths 99; there has therefore been a decrease of 386 cases in the one instance and 11 in the other.

169. The following Table shows the rates of admissions and deaths from this order of disease at the chief stations of the army, comparatively arranged :—

Comparative prevalence at stations.

MIASMATIC DISEASES.

STATIONS.	Rate per Mille of Strength.		STATIONS.	Rate per Mille of Strength.	
	Admissions.	Deaths.		Admissions.	Deaths.
Thayetmyoo - - -	251.3	5.3	Secunderabad - - -	705.0	17.4
Bangalore - - -	267.3	5.3	Fort St. George - - -	720.8	10.0
Cannanore - - -	534.5	2.8	Kamptee - - -	805.1	3.8
Tonghoo - - -	544.4	—	Bellary - - -	836.6	3.5
St. Thomas' Mount - -	556.2	13.2	Rangoon - - -	844.1	17.1

From this it appears that the greatest number of admissions and deaths has taken place at Rangoon from this order of disease. With this exception, the Burmese stations on the whole appear to be more free from miasmatic diseases than other stations of the army.

Thayetmyoo has the least number of admissions, and Tonghoo the least mortality from this cause, of any of the other places.

The principal diseases which have made up this order are now considered separately as follows.

Small-pox, prevalence of, during previous years.

170. The following statement shows the rates of admission and deaths from small-pox in the army, as contrasted with previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	1·6	·8	·8	·2	·7	·1	·7	·8
Deaths - - -	-	·2	·07	-	·1	-	·08	·1

It will be observed that the admissions and mortality from this disease have been slightly in excess of former periods; the total admissions having amounted to nine, out of which there have been two deaths.

The only admissions which are shown by the stational returns, are five at Bangalore, one at Poonamallee, and one at Secunderabad. Two deaths occurred at Bangalore.

Prevalence of, contrasted with Bengal and Bombay.

171. The above rates are lower than those which are shown to prevail in the Bengal Presidency, where the average admissions and deaths from this disease are 2·4 and ·4 respectively. In 1865, they were 2·2 and ·35, while in Bombay for the same period the rate of admissions was 1 and the deaths ·2 per mille.

Dysentery.

172. The admissions from this disease during the year 1866, have amounted to 1,212, of which 900 are acute cases. The deaths have been 45, of which 31 are from the latter type:—

Contrast with previous years.

173. The following statement shows the sickness and mortality in the army from this cause contrasted with former years:—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	85·0	74·9	62·0	64·3	75·5	109·8	78·5	108·4
Deaths - - -	1·5	1·7	1·2	1·7	1·7	3·3	1·8	3·9

From this it will be observed that during the past two years there has been a considerable increase in the number of cases of dysentery, and a higher proportion of deaths

Comparative prevalence at stations.

174. An examination of Table VI. shows that the Hyderabad Subsidiary Force has contributed the largest proportion of any other division, being 188·1 per mille, of which 169·4 are acute cases.

The following have been the rates of admissions and deaths from this disease at 10 of our largest stations.

STATIONS.	Per Mille of Strength.		STATIONS.	Per Mille of Strength.	
	Admissions.	Deaths.		Admissions.	Deaths.
Kamptee - - - -	24·9	—	Bellary - - - -	102·2	3·5
Thayetmyoo - - -	30·0	1·7	Cananore - - - -	125·3	1·4
Bangalore - - - -	33·0	2·1	Tonghoo - - - -	126·6	—
Fort Saint George - - -	55·1	2·0	Rangoon - - - -	167·3	5·7
St. Thomas' Mount - - -	101·5	2·2	Secunderabad - - - -	182·3	5·4

From this it appears that Kamptee has the lowest rate of admissions from this

this disease, while Secunderabad and Rangoon are remarkably high. The deaths at the latter place are higher than at any other station.

175. The total admissions from this disease have been 1,158, and deaths seven. Diarrhœa.

176. The following statement shows these figures contrasted with the rates of former years. Prevalence of, during previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admission - - -	94.9	71.4	65.2	70.9	101.8	101.8	83.9	103.5
Deaths - - -	1.4	.6	.3	.5	.9	.8	.7	.6

As was remarked with regard to the former disease, so it may be said of this, that the admissions of late years have considerably increased. The reason for this is not apparent.

177. A reference to Tables IV. and VI. shows that the Ceded Districts and Hyderabad Subsidiary Force have contributed chiefly to this excessive increase in admissions, being at the rate of 189.3 and 129.7 respectively.

The following table shows the rates of admissions and deaths at each station comparatively arranged. Comparative prevalence at stations

STATIONS.	Per Mille.		STATIONS.	Per Mille.	
	Admissions.	Deaths.		Admissions.	Deaths.
Kamptee - - - -	48.9	.95	Tonghoo - - - -	93.3	-
Thayetmyoo - - - -	69.0	-	Cannanore - - - -	112.3	-
Bangalore - - - -	73.1	-	Secunderabad - - - -	132.7	1.9
St. Thomas' Mount - - -	81.6	-	Fort St. George - - - -	174.3	2.0
Rangoon - - - -	82.2	-	Bellary - - - -	191.5	-

The greatest number of admissions is at Bellary and the least at Kamptee, which station appears to be peculiarly free from bowel complaints. The greatest mortality is at Fort St. George.

178. The increase of bowel complaints in the army would appear to have taken place at the stations last on the above list. Bowel complaints contrasted with other Presidencies.

In the Bengal Presidency, the same increase does not appear to have taken place of late years, as the following Table shows.*

Rate per Mille of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Admitted - - -	277	211	222	168	144	133	140	185
Died - - -	12.58	5.64	5.36	3.56	3.73	2.30	2.87	5.14

Comparing the above with the average rates of admissions and deaths from bowel complaints in this presidency, which are 162.4 and 2.5 per mille, we find that the contrast is favourable to Madras. During the year 1866, the admissions have been 211.9 per mille, and the deaths 4.5.

In the Bombay Presidency, the admissions and deaths from diarrhœa were 120 and .8 per mille respectively, and including dysentery there were 162.4 admissions and 2.4 deaths per mille, which is within a decimal point of the average of this presidency.

179. There has been a comparative immunity from this disease enjoyed by the army serving in the Madras Presidency during the year 1866, as there have been only 45 admissions and 28 deaths from this cause. Cholera.

180. The

* Bengal Annual Report for 1865, page 17.

Contrast with
previous years.

180. The following Table exhibits the prevalence of this disease during the previous six years :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	8.2	5.4	6.1	6.4	7.6	5.9	6.6	4.0
Deaths - - - -	3.2	2.6	3.1	3.1	2.5	2.9	2.9	2.5

The average number of admissions has been 86.3, and the deaths 38.3 during the six-year period; the maximum number being reached in 1860, when the admissions were 107 and deaths 42, and the minimum number during 1865, when the admissions were 76 and the deaths 38.

Decrease of
Cholera.

181. There has therefore been a decrease of 41.3 admissions and 10 deaths on the average. These results are the more remarkable during the past year, when it is considered that the disease was very rife amongst the civil population in the neighbourhood of our large military stations, as is shown by the district mortuary returns appended to this Report.

Comparative pre-
valence of Cholera
in different Divisions of the Army
during previous years.

182. The following statement shows the admissions and mortality from this disease in different divisions of the army for six previous years comparatively arranged :—

DIVISIONS.	1860.		1861.		1862.		1863.		1864.		1865.		Average.		1866.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Hyderabad Subsidiary Force	8.8	2.5	-	-	3.2	.8	.4	-	1.1	.7	3.0	1.9	2.9	1.0	5.2	5.6
Southern Division - -	3.8	.6	5.2	4.1	-	-	7.8	5.2	1.1	1.1	-	-	3.1	1.8	11.8	3.9
Pegu Division - - -	-	-	.4	.4	1.3	.4	18.0	10.5	2.6	1.5	4.5	2.2	4.2	2.4	2.8	1.6
Mysore Division - - -	8.2	4.5	18.3	8.2	1.1	.7	1.4	.7	.7	.3	2.2	1.2	5.1	2.5	2.1	1.0
Centre Division - - -	13.0	7.2	3.1	.6	6.1	4.0	9.1	4.5	17.0	7.6	4.5	1.7	8.8	4.2	9.6	3.7
Northern Division - -	10.7	-	24.6	16.4	-	-	14.9	7.4	-	-	-	-	10.7	4.7	-	-
Nagpore Force - - -	30.2	12.1	.7	-	12.9	10.3	3.8	.7	20.9	9.3	12.1	9.0	12.9	6.7	.8	.8
Ceded Districts - - -	1.8	5.0	6.0	2.0	34.8	15.1	7.7	.9	23.5	-	24.5	8.4	17.0	4.5	-	-

From this Table it appears that during the past six years cholera has been less prevalent in the Hyderabad Subsidiary Force than in any other division, and that the Ceded Districts suffered in a far greater proportion than any other part of the presidency.

During the past year, however, the European force serving in the Ceded Districts has been entirely free from cholera, although the natives of the districts have suffered considerably.

Those divisions which have suffered most in proportion to their average strength are the northern and centre, six admissions and three deaths having been registered in the former, and 13 admissions and five deaths in the latter.

Comparative pre-
valence of, in
different Stations.

183. The following statement shows the sickness and mortality from this disease at the following stations of the army, during 1866, comparatively arranged.

STATIONS.	Admis- sions.	Deaths.	Per Mille.		STATIONS.	Admis- sions.	Deaths.	Per Mille.	
			Admis- sions.	Deaths.				Admis- sions.	Deaths.
Cannanore - - -	-	-	-	-	Fort St. George - -	2	1	4.4	2.2
Rangoon - - -	-	-	-	-	Bellary - - -	4	-	4.7	3.53
Tonghoo - - -	-	-	-	-	Secunderabad - -	15	13	5.9	5.04
Kamptee - - -	1	1	.9	.95	Thayetmyoo - -	4	2	7.0	-
Bangalore - - -	6	3	3.2	1.6	St. Thomas' Mount	4	3	8.8	6.62

The first of these stations is one that has been exempt up to the present time from epidemic outbreaks of cholera.

St. Thomas' Mount has suffered most in proportion to its strength from this disease. The Burmese stations with the exception of Thayetmyoo have been entirely free from this disease. Four admissions are stated to have taken place at Thayetmyoo, two of which proved fatal.

184. Contrasting the rates of admissions and deaths from cholera amongst Europeans in the Madras Presidency with those in Bengal, we find that this disease has been much less prevalent in the army serving in this Presidency than that in Bengal.

Contrast with other Presidencies.

The average rate of admissions for seven years, 1859 to 1865, in the Bengal Presidency is 15·1 per mille, and the deaths 9·1 per mille, which gives an increase in both these elements to the larger Presidency of 8·5 and 6·2 per mille respectively.

In the Bombay Presidency the rates of admissions and deaths during 1865 were 28 and 16 per mille, an unusually high rate of mortality from this disease.

185. The total admissions during the year 1866 from fevers have been 2,705, of which 1,393 have been of the intermittent type; 147 remittent; 7 typhoid; and 1,158 continued.

Fevers.

The deaths have been 26, of which 8 are intermittent; 4 remittent; 4 typhoid; and 10 of the continued type.

186. The following Table shows these figures contrasted with former periods:—

Contrast with previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admission - - -	380·4	248·0	228·1	202·4	227·4	208·0	249·7	241·8
Deaths - - -	2·3	1·8	1·3	1·5	3·1	2·4	2·0	2·1

An examination of this Table shows that the rates of sickness and mortality have considerably decreased of late years, and although there has been a slight increase during the year 1866 on the admissions and deaths of the four previous years, it is still slightly below the six-year average. The deaths are about the same.

Tables Nos. IV., VII., and VIII., show that the Nagpore Division has the largest rate of admissions from fever of the intermittent type, and that the Pegu Division and Ceded Districts have suffered most from the continued type, during the past year.

187. Compared with the proportion of admissions from fever in the Bengal Presidency, the above Table contrasts very favourably, as the average rate of admissions per mille from this cause for seven years, 1859 to 1865 inclusive, amounts to 692 and the deaths to 4.

Contrast with Bengal.

Page 16, Table XVII. of Annual Report for 1865.

188. The following Table shows the rates of admissions and deaths at the principal stations of the Madras Army.

Comparative prevalence of, at Stations.

STATIONS.	Rate per Mille.		STATIONS.	Rate per Mille.	
	Admissions.	Deaths.		Admissions.	Deaths.
Bangalore - - -	66·0	—	Cannanore - - -	228·9	—
Thayetmyoo - - -	83·1	—	Secunderabad - - -	241·1	3·6
Tonghoo - - -	144·2	—	Fort St. George - - -	375·2	4·0
St. Thomas' Mount - -	185·3	4·4	Rangcon - - -	483·2	9·9
Bellary - - -	189·1	—	Kamptee - - -	572·8	2·87

It will be observed that Kamptee is highest on the list for the proportion of admissions from fever, which is almost entirely made up of intermittent fever.

The greatest mortality has occurred at Rangoon, where the continued fever has been the prevailing type.

Bangalore and Thayetmyoo are singularly free from deaths from this disease.

It should be noticed that at Secunderabad, Bangalore, Bellary, Rangoon and St. Thomas' Mount, admissions from typhoid fever have occurred.

Hepatic Disease.

189. The total number of admissions from this disease during the year 1866 was 864; 436 of which have been acute cases.

Contrast with previous years.

190. The following statement shows these figures contrasted with previous periods:—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Admissions - - -	61·2	61·9	53·3	64·9	70·2	79·5	65·0	77·2
Deaths - - -	2·7	2·3	3·1	2·5	2·4	3·6	2·8	2·9

There appears to have been a slight increase in the prevalence of hepatic affections during the past two years on former periods, although the mortality is about the usual average during the year 1866.

The Centre Division shows the largest number of admissions into hospital, from the fact of so many cases being sent from other stations for the benefit of the Eastern Coast climate.

The Southern Division shows the next largest number, and then the Hyderabad Subsidiary Force.

In the latter division of the army the greatest mortality from acute hepatitis occurs, and in the Nagpore Force the greatest mortality is shown amongst chronic cases.

Comparative prevalence of, at Stations.

191. The following Table shows the comparative prevalence of this disease at the principal stations of this Presidency for 1866:—

Hepatic Disease.

STATIONS.	RATE PER MILLE.		STATIONS.	RATE PER MILLE.	
	Admissions.	Deaths.		Admissions.	Deaths.
Bellary - - - - -	19·2	—	Tonghoo - - - - -	68·8	2·22
Thayetmyoo - - - - -	21·2	—	Secunderabad - - - - -	71·4	5·4
Bangalore - - - - -	24·0	2·1	St. Thomas' Mount - - - - -	97·1	2·20
Kamptee - - - - -	64·2	·95	Cannanore - - - - -	109·5	4·3
Rangoon - - - - -	67·8	—	Fort St. George - - - - -	143·4	2·0

The greatest number of admissions has occurred at the coast stations, but these have been made up to a great extent by cases sent from corps in the interior.

The greatest mortality, it appears, has taken place at Secunderabad as before stated. Bellary has been peculiarly free from deaths from this disease.

Contrast with other Presidencies.

192. Contrasted with Bengal, the admissions from this disease in the Madras Presidency bear an unfavourable comparison, as the average rate per mille for seven years, 1859 to 1865 inclusive, is shown to be 61·8. The deaths in this Presidency are not so high as those in Bengal, which average 3·48 per mille.

In the Bombay Presidency the admissions and deaths for 1865 are 48·6 and 2·2 per mille respectively.

Venereal Diseases.

193. As will have been seen in the foregoing portion of this report, this class of disease has been the cause of the greatest number of admissions into hospital during the past year, in which 2,624 cases of venereal diseases have been under treatment in hospital, that is to say 234·7 per mille of average strength.

The

Vide page 18, Statement XXIII., Bengal Annual Report for 1865.

The number of admissions from this cause alone makes up one-sixth of the total cases admitted into hospital.

194. The following statement shows the rate of admissions during 1866 contrasted with previous years:—

Contrast with previous years.

	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admitted from Venereal Diseases.	267.0	293.3	304.5	257.3	269.2	227.7	270.5	234.7

The information gained by the above Table is so far satisfactory that it shows that there has been a slight decrease during the past year, on the average of six previous years, of nearly 36 per mille, which in actual figures means 897 cases.

195. Comparing this Table with the average rate of admissions in the Bengal Presidency for seven years, 1859 to 1865, inclusive,* which is 306.8 per mille, the above rates bear a favourable contrast.

Contrast with other Presidencies.

During the year 1865 the rate of admissions in the two Presidencies appears, singular to say, to have been almost precisely the same, viz., 227 per mille. In the Bombay Presidency for the same period they are at the rate of 201† per mille.

A reference to Table 3, Appendix, page 168, shows that (excluding the Northern Division) the Mysore Division has the lowest rate of admissions from this cause viz., 368 or 129.5 per mille of average strength, while the centre division has 516 admissions, or 383.6 per mille of strength.

196. The following Table shows the actual admissions from venereal diseases in the different stations of the Madras Presidency occupied by European troops whose average strength has been over 450.

Comparative prevalence of, at stations.

STATIONS.	Admissions.	Admissions per Mille.	STATIONS.	Admissions.	Admissions per Mille.
Tonghoo - - - -	48	106.6	†St. Thomas' Mount - -	113	249.4
‡Bangalore - - - -	204	108.8	‡Bellary - - - -	215	252.6
Thayetmyoo - - - -	88	146.9	‡Kamptee - - - -	290	278.3
‡Cannanore - - - -	141	203.1	Rangoon - - - -	246	354.9
‡Secunderabad - - - -	634	246.0	Fort St. George - - - -	280	562.2

At Wellington and Trichinopoly where there are Lock hospitals, the admissions from venereal diseases have been 77 and 37, or 270 and 168 per mille, respectively.

It will be observed that Tonghoo shows the lowest, and Fort St. George the highest rate of admissions from venereal diseases.

197. At Bangalore the admissions have been very low compared with former years, and the following extract from the Report on the Lock Hospital at Bangalore, by Deputy Inspector General Orr, dated 1st April 1867, proves that the measures which have been adopted for the prevention of venereal diseases at that station have been successful.

Decrease at Bangalore.

“The working of these institutions continues very satisfactory. Dr. Macbeth in his concise annual report remarks, one very gratifying fact is worthy of record, the exceptional freedom from syphilitic disease which has ruled in the 16th Lancers; it reflects much credit on those who have charge of the Lock Hospital, and other conservative means at this station.”

It

* Vide page 19, Bengal Sanitary Commissioner's Annual Report for 1865.

† Vide page 47, Bombay Sanitary Commission Report.

‡ These stations have Lock Hospitals.

It is to the station of Bangalore is due the reason for the decrease in venereal disease shown in the Mysore division by Table III., p. 168, as I am informed there has been an increase at Cannanore of venereal disease amongst the troops. The only death from this disease occurred at the latter station.

Great prevalence
of, at Fort St.
George and
Rangoon.

198. The very large rate of admissions at Rangoon and Fort St. George must be considered as due to the difficulty of applying preventive measures, for the protection from venereal disease, to large sea port towns, as compared with other military stations.

Admissions into
Lock Hospitals.

199. The following returns, furnished by the Inspector General, Indian Medical Department, shows the number of admissions and deaths in the Lock Hospitals at the undermentioned stations for the year 1866 :

	Bangalore.	Cannanore.	St. Thomas' Mount.	Trichinopoly.	Wellington.	Bellary.	Secunderabad.	Kamptee.	TOTAL.
Admitted - - - - -	332	69	96	140	62	210	373	186	1,468
Died - - - - -	3	1	—	—	—	3	1	—	8

Invaliding.

200. The number of men invalided out of the British troops serving in the Madras Presidency during the year 1866 amounts to 645.

The following Table shows the number invalided at each station of the Army :—

STATIONS.	Number Invalided.	Rate per Mille of Strength.	STATIONS.	Number Invalided.	Rate per Mille of Strength.
Bangalore - - - - -	66	35·2	Trichinopoly - - - - -	10	45·4
Secunderabad - - - - -	187	72·5	Tonghoo - - - - -	2	4·4
Kamptee - - - - -	121	116·1	Cannanore - - - - -	39	56·1
Bellary - - - - -	63	74·0	Thayetmyoo - - - - -	38	67·2
St. Thomas' Mount - - - - -	10	22·0	Madras - - - - -	43	86·3
Penang - - - - -	3	40·5	Wellington - - - - -	13	45·6
Singapore - - - - -	2	14·7	Poonamallee - - - - -	1	4·5
Rangoon - - - - -	47	67·8			

Causes of
invaliding.

201. It will be observed that diseases of the liver have been the most frequent causes of invaliding—103 cases, of which 95 are chronic affections having been recorded, and diseases of the heart 66.

Next in frequency comes venereal diseases 65, dysentery 60, asthenia 50, rheumatism 47, intermittent fever 44, phthisis 39, and bronchitis 31.

The largest number of cases of hepatic affections are invalided from Secunderabad, at which station they amount to 34.

This station also contributes 12 cases of chronic dysentery, and 22 cases of venereal diseases, and 28 of diseased heart.

The largest number of cases of asthenia were from the Artillery at Bangalore.

Of the 44 cases of intermittent fever, 41 came from Kamptee, 40 being from the 1st Royal Regiment.

Rheumatic affections seem to have been also a fertile source of invaliding at this station.

Of the cases of phthisis, 16 came from Secunderabad.

202. The following Table shows the amount of invaliding and its causes during 1866, compared with previous years:—

Contrast with previous years.

Causes of Invaliding.	Invalided per Mille of Strength.						
	1860.	1861.	1862.	1863.	1864.	1865.	1866.
Fevers - - - -	0.71	0.18	0.63	0.63	1.30	1.60	3.82
Eye Diseases - - - -	0.80	0.18	0.47	1.18	1.00	0.45	0.76
Dysentery - - - -	7.23	2.42	2.28	2.93	4.69	4.36	5.20
Diarrhœa - - - -	1.78	0.65	0.47	1.18	1.23	0.61	0.97
Rheumatism - - - -	6.87	7.63	6.14	4.27	8.77	3.36	3.96
Veneral Diseases - - - -	4.19	1.95	1.83	4.75	7.31	4.74	5.75
Phthisis - - - -	3.39	2.14	1.91	2.69	4.07	4.28	3.41
Epilepsia - - - -	0.62	0.65	0.15	0.71	1.15	0.45	0.62
Heart Diseases - - - -	3.66	2.70	1.91	2.45	4.69	2.52	5.81
Lung Diseases - - - -	2.05	2.88	0.47	1.03	2.77	1.22	2.70
Hepatitis - - - -	9.91	5.12	3.59	2.06	7.00	4.51	9.05
Worn out - - - -	-	3.16	1.59	1.34	-	-	0.52
Other causes - - - -	14.37	5.21	6.22	13.62	20.01	10.10	13.09
Causes not specially calculated -	-	-	-	-	-	-	-
Mental Diseases - - - -	2.14	0.65	0.63	1.18	1.00	0.61	0.96
TOTAL - - - -	57.77	35.57	28.33	40.09	65.03	38.90	56.68

An examination of this Table shows that a considerable fluctuation has taken place in the rate of invaliding in this Presidency during the past six years, the average rate being 44.28 per mille.

During 1866 the rate has been 12.40 per mille above this average, and in 1865 it was 5.38 below it. In 1862 the rate was as low as 28.3 per mille, and in 1864 as high as 65.03.

203. In the Bengal Presidency the average rate of invaliding for seven years, 1859 to 1865, is 35.29* per mille, or 10 per mille less than Madras.

Contrast with other Presidencies.
* Bengal Sanitary Commissioner's Report, page 26.

In the Bombay Presidency the invaliding for 1864 and 1865 was as low as 30.8† and 30.7 per mille.

† Adjutant General's Return, pages 52 and 42 of Bombay Sanitary Commission Reports for 1864-65.

204. The following Return has been compiled from information furnished to me by the Inspector General British Medical Service, and shows the proportion of deaths from the principal diseases at different ages.

Relation of age to mortality.

DISTRIBUTION of the Strength of the Army according to Age on the 1st January 1866.

Total Strength.*	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 and Upwards.
11,378 - -	710	3,114	4,473	2,183	759	139

DEATHS of 1866, and the Ratio per Mille of Strength at the different Ages.

Causes of Death.	Deaths of 1866.				Died per Mille of Strength, as above stated.			
	Under 20.	20 to 24.	25 to 29.	30 and Upwards.	Under 20.	20 to 24.	25 to 29.	30 and Upwards.
Cholera - - -	1	9	11	7	1.4	2.8	2.4	2.2
Fevers - - -	1	3	18	3	1.4	0.9	4.0	0.9
Apoplexy - - -	-	-	-	4	-	-	-	1.2
Delirium Tremens -	-	-	-	2	-	-	-	0.6
Dysentery and Diarrhœa.	-	12	22	19	-	3.8	4.9	6.1
Hepatitis - - -	-	5	20	12	-	1.6	4.4	3.8
Phthisis Pulmonalis	2	2	9	7	2.8	0.6	2.0	2.2
Heart Diseases - -	-	1	5	12	-	0.3	1.1	3.8
All other Causes - -	3	8	25	31	4.2	3.5	5.5	10.0
All Causes - -	7	40	110	97	9.8	12.8	24.5	31.4

This Return is an interesting one, as showing the steady increase of the liability to death with the increasing age of the individual. The proportion of deaths

* This appears somewhat different from that given by the Quarterly Medical Returns.

deaths to strength is 31·4 in men above 30, while it falls as low as 9·8 per mille in those under 20.

The greatest proportion of deaths in young men under 20 occurs from phthisis pulmonalis, but the mortality from most other diseases increases steadily amongst men of advanced age, with the following exceptions, viz., cholera, fevers and hepatic disease. Deaths from these diseases occur in greatest proportion amongst men from 25 to 29 years of age.

To make this Table really valuable, a more extended period is required before practical conclusions can be deduced from it.

Health of women
belonging to
British regiments.

205. The health of women belonging to British regiments serving in the Madras Presidency during 1866 amounts to 1,389, out of which number 1,372 admissions into hospital have occurred, and 35 died.

These figures represent a ratio of 987·7 admissions, and 25·2 deaths per mille of strength.

By a late order many women and children are treated in their own quarters. The above figures cannot therefore be accepted as quite accurate as regards the sickness amongst this class.

Admissions.

206. Of the admissions, 678 are of the zymotic class of disease or nearly one-half the total admissions; 17 are constitutional affections; 290 come under the local class of disease, 44 are of the accidental order; and 343 are of developmental order, being chiefly made up of diseases peculiar to women.

Of the zymotic class, 658 admissions are of the miasmatic class; 8 are venereal affections, 4 drunkenness, and 17 parasitic diseases.

Admissions from
special diseases.

207. The following Table shows the principal diseases which have contributed to make up the admissions:—

Diseases.	Admissions.	Ratio of Admissions per Mille of Strength.	Diseases.	Admissions.	Ratio of Admissions per Mille of Strength.
Ophthalmia - - -	126	90·7	Respiratory Diseases - -	30	21·5
Dysentery - - - -	80	57·5	Heart Diseases - - -	4	2·8
Diarrhoea - - - -	96	69·1	Dyspepsia - - - -	106	76·3
Cholera - - - -	17	12·2	Hepatic Affections - -	22	15·8
Fever - - - -	287	206·6	Child-birth - - -	243	174·9
Phthisis Pulmonalis - -	5	3·5	Diseases of Women - -	72	51·8
Nervous Diseases - - -	21	15·1			

From this it appears that by far the largest proportion of admissions has taken place from fevers, of which the intermittent and continued types have contributed the greatest number. Next in numerical order come "labour" cases, then cases of ophthalmia and dyspepsia. Both these diseases are very high.

Seventeen admissions are cases of cholera.

Deaths from
special diseases.

208. The following Table shows the diseases which made up the deaths:—

Diseases.	Deaths.	Ratio per Mille of Strength.	Diseases.	Deaths.	Ratio per Mille of Strength.
Dysentery - - - -	8	5·7	Phthisis - - - -	4	2·8
Diarrhoea - - - -	1	0·7	Diseased Heart - - -	1	0·7
Cholera - - - -	10	7·1	Hepatic Diseases - -	1	0·7
Febris Intermittent - -	1	0·7	Dyspepsia - - - -	1	0·7
Febris Continua - - -	3	2·1	Metria - - - -	1	0·7
Anæmia - - - -	1	0·7	Child-birth - - -	1	0·7
Cancer - - - -	1	0·7	Insolatio - - - -	1	0·7

From

From this it will be observed that cholera has been the cause of the greatest mortality, 10 of the 17 admissions mentioned above having been fatal. Next in order of frequency comes dysentery.

Four deaths occurred from phthisis, and three from continued fever.

209. The following Table shows the admissions and deaths amongst women at the different stations of the army, comparatively arranged.

Comparative sickness and mortality at stations.

STATIONS.	Admissions.	Deaths.	Ratio per Mille of Strength.		STATIONS.	Admissions.	Deaths.	Ratio per Mille of Strength.	
			Admissions.	Deaths.				Admissions.	Deaths.
Kamptee - -	181	1	150.8	8.3	Secunderabad -	377	16	976.6	41.4
Thayetmyoo - -	12	-	235.2	-	Bangalore - -	302	6	1086.3	21.5
Cannanore - -	70	1	457.5	6.6	Tonghoo - -	51	-	1275.0	-
St. Thomas' Mount	27	2	540.0	40.0	Trichinopoly - -	31	2	1291.6	83.3
Penang - -	10	-	588.2	-	Bellary - -	166	4	1566.0	37.7
Madras - -	61	2	677.7	22.2	Singapore - -	29	-	1812.5	-
Rangoon - -	55	1	948.2	17.2					

From this Table it is observed that at four stations, Penang, Singapore, Tonghoo, and Thayetmyoo no death occurred, while at Kamptee and Cannanore the deaths are 8.3 and 6.6 per mille.

A very large proportion of deaths occurred at Trichinopoly, also at Secunderabad, Bellary, and Saint Thomas' Mount; but as regards Trichinopoly, this high death-rate is not fairly represented, the strength being only 24, out of which 2 died, thus making the ratio per mille fallaciously high.

210. The strength of children belonging to corps of Her Majesty's British service during 1866 amounts to 2,090, of which number 1,470 were admitted into hospital and 166 died.

Health of children of Her Majesty's British corps.

These figures give a ratio of 703.3 admissions and 79.4 per mille respectively.

As many children are treated as out-patients and at home, the same remarks made concerning the medical statistics of women equally refer to children.

211. Of the admissions, 1,101 are of the zymotic class or more than one-half the total number admitted; 188 are of the constitutional class; 109 local; and 72 accidental affections.

Admissions from special diseases.

Of the zymotic affections 1,075 are of the miasmatic order, and 26 parasitic.

The following Table shows the principal diseases which have contributed towards making up the admissions into hospital.

Diseases.	Admissions.	Ratio to Strength per Mille.	Diseases.	Admissions.	Ratio to Strength per Mille.
Fevers - - - -	258	123.4	Anæmia - - - -	25	11.9
Scarlatina - - - -	40	19.1	Nervous Diseases - -	12	5.7
Measles - - - -	104	49.7	Convulsions - - - -	25	11.9
Dysentery - - - -	84	40.1	Teething - - - -	54	25.8
Diarrhoea - - - -	292	139.7	Respiratory Diseases -	44	21.0
Cholera - - - -	14	6.6	Dyspepsia - - - -	25	11.9
Ophthalmia - - - -	253	121.0	Asthænia - - - -	45	21.5

From the above Return it will be observed that fevers, ophthalmia, diarrhoea, and measles have made up the greatest number of admissions amongst children.

Deaths from
special diseases.

212. The following Table shows the diseases which have caused the deaths amongst children belonging to Her Majesty's British regiments serving in the Madras Presidency.

Diseases.	Deaths.	Ratio per Mille of Strength.	Diseases.	Deaths.	Ratio per Mille of Strength.
Fevers - - - -	11	5.2	Meningitis - - -	2	0.9
Measles - - - -	4	1.9	Hydrocephalus - - -	1	0.4
Scarlatina - - -	5	2.3	Convulsio - - -	24	11.4
Dysentery - - -	13	6.2	Respiratory diseases - -	4	1.9
Diarrhoea - - -	38	18.1	Colica - - - -	1	0.4
Cholera - - - -	11	5.2	Icterus - - - -	1	0.4
Ophthalmia - - -	1	0.4	Abscessus - - - -	1	0.4
Tonsillitis - - -	1	0.4	Teething - - - -	16	7.6
Aphthæ - - - -	1	0.4	Still-born - - - -	1	0.4
Anæmia - - - -	4	1.9	Asthænia - - - -	10	4.7
Anasarca - - - -	2	0.9	Marasmus - - - -	5	2.3
Phthisis Pulmonalis -	1	0.4	Ambustio - - - -	1	0.4
Mesenteric Diseases -	6	2.8	Subluxatio - - - -	1	0.4

It is thus seen that diarrhoea, convulsions, and teething have, as might be expected, caused the largest proportion of deaths.

The two former diseases have probably been due to irritation of the nervous system caused by teething.

Out of 14 admissions from cholera, it will be observed that 11 have been fatal, which is a very high mortality from this disease as compared with adults.

Comparative sick-
ness and mortality
at stations.

213. The following Table shows the sickness and mortality amongst children at the principal stations of the army, comparatively arranged.

STATIONS.	Admis- sions.	Deaths.	Ratio per Mille of Strength.		STATIONS.	Admis- sions.	Deaths.	Ratio per Mille of Strength.	
			Admis- sions.	Deaths.				Admis- sions.	Deaths.
Thayetmyoo - -	2	-	26.3	-	Tonghoo - - -	36	1	553.8	15.3
Penang - - -	5	1	178.5	35.7	Bellary - - -	131	24	761.6	139.5
St. Thomas' Mount	16	3	188.2	35.2	Bangalore - - -	352	13	794.5	29.3
Cannanore - -	48	10	193.5	40.3	Secunderabad - -	448	72	919.9	147.8
Rangoon - - -	42	4	358.0	34.1	Kamptee - - -	246	25	1,389.8	141.2
Madras - - -	55	5	482.4	43.8	Singapore - - -	70	-	1,666.6	-
Trichinopoly - -	19	8	527.7	222.2					

From this Table it is seen that the most healthy place for children has been one of the Burmese stations, viz., Thayetmyoo, a result which confirms the previous conclusions arrived at in another portion of this Report, as to the salubrity of this portion of the Madras Presidency.

Rangoon and the stations in the Straits all seem to have been comparatively salubrious for children.

The greatest mortality has occurred at those stations which have been remarkable during 1866 in this respect amongst adults, as shown in a previous portion of this Report.

Trichinopoly, Secunderabad, and Kamptee stand lowest on the list as regards deaths. The mortality amongst children at these stations, it will be seen, has been as high as 222.2, 147.8, and 141.2 per mille respectively.

Singapore exhibits the highest admission rate of all the stations mentioned above, while Bellary shows a high rate both in sickness and mortality.

Sickness amongst
temperate and
intemperate
soldiers.

214. Returns have been compiled showing the relative sickness and mortality amongst temperate and intemperate soldiers, but I regret to say that I do not consider them of sufficient value to give them a place in this Report. This arises from the entire untrustworthiness of that portion of the Table showing the proportion of temperate to intemperate men.

The system which has been, I believe, adopted in the classification of men of different habits, has been to place no man under the designation of "intemperate," whose name does not appear upon "the defaulter sheet," as three times convicted of drunkenness within the year. Now, there is a large number of men in every regiment who are known amongst their comrades, and
more

more than suspected by their officers, as being extremely intemperate in their habits, but these men are *officially* very sober individuals, because they are from habitual excess not rendered unfit for duty.

A correct classification of men of different habits is doubtless a matter of difficulty, but until this is done correctly, it is needless to say that any statistical tables of the above nature are worthless.

215. The accompanying Return, received from the principal medical officer of Her Majesty's British troops, shows the principal admissions and deaths amongst the following corps, which are the only ones beyond small detachments which were engaged on the line of march during the year 1866. Health of troops marching.

CORPS.	Place and Date of Leaving Station.	Date of Arrival.	Daily Average Strength of Corps.	Total Number of Admissions on Line of March.	Total Number of Deaths.	Admissions and Deaths from Principal Diseases.																													
						Intermittent Fever.		Remittent Fever.		Continued Fever.		Typhus Fever.		Typhoid Fever.		Small-Pox.		Dysentery.		Diarrhoea.		Cholera.		Ophthalmia.		Rheumatism.		Erysipelas.		Delirium Tremens.		Hepatic Diseases.		TOTAL.	
						A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.		
B. 23rd Brigade, R. A.	Secunderabad 4 Jan. 1866.	St. Thomas' Mount 6 Feb. 1866.	157	17	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	2	-	12	-		
Left Wing, 76th Regiment.	Bangalore - 23 Dec. 1865.	Bellary - 16 Jan. 1866.	310	32	-	-	-	-	-	2	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	1	-	17	-		
18th Hussars	Bangalore - 21 Nov. 1865.	Secunderabad 1 Jan. 1866.	458	45	-	6	-	-	-	6	-	-	-	-	-	-	4	-	2	-	-	-	-	3	-	-	-	-	-	2	-	23	-		
Head Qrs. and Right Wing, 2-21st Foot.	Bellary - 6 Jan. 1866.	Secunderabad 1 Feb. 1866.	304	9	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-			
Left Wing, 2-21st Foot.	Bellary - 12 Jan. 1866.	Secunderabad 8 Feb. 1866.	378	9	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	-	-	6	-			
TOTAL			1,607	112	-	8	-	-	-	9	-	-	-	-	-	-	17	-	16	-	-	-	5	-	-	-	-	-	5	-	60	-			

It will be observed that the principal diseases which obtained admission into hospital were cases of dysentery and diarrhoea. There were no deaths, and the corps appear to have been very healthy.

216. The following important rules, to be observed amongst troops on the march or within cantonments during outbreaks of cholera, and regarding the conservancy of camps and arrangements with reference to the movements of European and Native families, have been issued as a general order by the Commander in Chief.

Rules to be observed in outbreaks of cholera.

1st. Prior to the march of troops, it should be ascertained whether cholera prevails on the road.

2nd. Particular attention must at all times be given to the selection of encamping ground, for which, whenever practicable, elevated and dry situations should be chosen, sufficiently removed from the village or town, and from the influence of swamps or pools of stagnant water. The banks of rivers are to be avoided. Officers are strictly enjoined never, under any circumstances, to encamp upon ground, however inviting it may appear, where cholera has shown itself in a preceding corps or detachment.

3rd. Officers commanding corps or detachments in movement, are to consult with the officer in medical charge, regarding the healthiness of the site upon which they propose encamping, and in such cases officers are to be guided by medical opinion, unless they shall see weighty reasons for setting it aside, which are at once to be reported to the Quartermaster General for the information of the Commander in Chief.

4th. In the event of the troops or followers being attacked by sickness, it is directed that the greatest attention be paid to the selection of encamping ground; that it be high, dry, and clean; and this, it is considered, may generally be found at some slight sacrifice of convenience, with respect to water and supplies, which, however, in the case supposed, must be looked upon as of minor importance.

5th. Officers whose camps may be attacked by cholera, are strictly enjoined to avoid encamping near towns or villages, and to allow no further communication with the inhabitants than may be absolutely necessary for the supply of provisions ; and this under such restrictions as may confine it to the healthiest part of the camp.

6th. The same rules are to be followed when passing through a district, or through a town or village, in which the disease may exist.

7th. In cases where the violence of the disease may render the measure necessary, officers will halt altogether on any eligible spot within reach, or merely move their camp for change of air, and clean encamping ground, until it may appear advisable to move on. Whenever practicable, the corps or detachment should be broken up into as many divisions as can be properly provided with medical aid, and separate encampments formed one or two miles apart—measures being taken to prevent communication.

8th. So long as cholera exists in camp, a daily report of cases and deaths is to be forwarded to the Quartermaster General ; European and Native are to be separately shown, and the names of all European officers attacked or deceased are to be reported.

9th. In cases of extraordinary sickness, officers commanding corps and detachments are authorised to indent upon collectors, or the Commissariat Department, for such number of country cots as may be absolutely necessary.

10th. When sufficient medical aid is available, and there is no military necessity for marching entire, regiments will march by wings at an interval of ten days.

11th. On every occasion of halt, orders should be issued and enforced for a thorough washing of all the clothes and for the complete purification of the carts, and the matting which forms the hood of the carts. Officers commanding are especially enjoined to see that these instructions are rigidly carried out, as it has been proved by experience that this is one of the most effectual modes of preventing cholera or of mitigating its attacks. In the Progress Report, it should be noted that this has been done. Care should be taken that the water used for this purpose is not that used for drinking. A guard should be invariably placed over the latter to prevent its contamination.

12th. Should cholera attack the regiment, it is desirable that a divergence from the road of four or five miles should be made at right angles to the prevalent wind or track of the disease. But this will seldom be practicable on account of the want of supplies on a road on which notice has not been given.

13th. Immediate information by telegraph, if possible, is to be given by civil and military officers to the adjacent military stations whenever cholera occurs among them, in order that marching and travelling may be put a stop to, and that other stations may be put on their guard against it.

14th. Whenever cholera occurs in a cantonment, preparations should be made to move any part of the troops into the selected camps at the shortest notice, and if the disease threatens to manifest itself in any unusual degree or epidemic form, the body affected should be immediately moved into camp, and no unfavourable condition of the weather is to prevent this movement being carried out. The chief military and medical officers on the spot are to consult as to the course to be taken, and the result should be communicated by telegraph to head quarters. If necessary, two or three camps should be formed and additional medical aid called for.

15th. The sick labouring under other diseases than cholera, will move with the force, and share the benefit of removal from the choleraic atmosphere.

16th. It must be insisted on, that all discharges from the stomach and bowels of cholera patients be instantly removed and buried in pits.

17th. Strong deodorants are to be thrown into the receiving vessels, as well as into the pits, latrines, and privies.

18th. Should cholera follow the troops, they will be removed short distances at right angles if possible to the prevalent wind and track of the disease every second or third day, care being taken that the marches in no way fatigue the men.

19th. The breaking out of cholera in a regiment or at a station is, on no account, to cause the suspension of the soldier's daily amusements and occupations—care being taken that the latter in no way fatigue them ; and commanding officers will use their utmost exertions to develop any recreation or employment

employment of which the effect is to keep the men's minds in their normal state.

20th. It often occurs that soldiers on a visitation of cholera indulge in the use of spirituous liquors, in the belief that they are a preventive against the disease. The medical authorities unanimously condemn this supposed remedy as a certain promoter of the disease: commanding officers are therefore enjoined to use their utmost endeavours to prevent so baneful a practice.

21st. One of the several cholera antidotes is the early treatment of premonitory symptoms, of which looseness of the bowels is a principal one. Commanding officers are therefore requested to give the most precise orders on the subject, and to cause all men affected by premonitory symptoms to be placed at once in a premonitory ward.

22nd. The troops are not to return to cantonments until all traces of the cholera shall have disappeared from the neighbourhood, either amongst the European or Native population. The barracks and hospitals will be thoroughly fumigated, the walls whitewashed, and the doors and window-frames painted before they are re-occupied.

23rd. The men will be supplied with hot tea and coffee before going out in the morning; they will invariably wear flannel belts, and all precautions must be taken to prevent their remaining in wet or damp clothes.

24th. So long as cholera exists in cantonments or in the adjacent cholera camps among the troops, a daily report of cases and deaths is to be forwarded to the Quartermaster General. Europeans and Natives are to be separately shown, and the names of all European officers, attacked or deceased, are to be reported.

25th. With a view to preserving the conservancy of camps and encamping grounds, the Commander in Chief directs that the system should be adopted in camp as is the practice in all military cantonments, the main principle of which is the daily burial of all refuse matter.

26th. It is therefore to be at once established as a standing order among all European troops moving in course of relief, or otherwise, that two trenches, each two feet deep, two feet wide, and fifty feet long, are to be dug by coolies to be employed for the purpose, at a distance of 120 yards from the flanks of each encamping ground, the inward flanks of such trenches to be 120 yards from the outward flanks of the camp, that is, in *echelon*; but should the nature of the ground prevent their location according to this rule, the same principle for their location is to be observed, that is, they are not on any account to be directly in front or rear of the camp, but in *echelon* on their flanks, being so placed that the prevailing wind is not to carry the effluvia to the camp; these trenches are never to be in such proximity to wells as to make percolation to the water possible.

27th. The quartermaster, or whoever is intrusted with the formation of the encampment, is to see that this arrangement is made daily at the advance ground before the arrival of the troops, and a flag or other mark should be placed to show the position of the trenches, one of which is to be allotted for the European soldiers, and the other for the Native camp followers, &c., of a British regiment: the same *principle* is also to be strictly enforced for Native regiments, cavalry or infantry, on the march. Officers commanding are to allot a certain site or position in the vicinity (but not too close) of each encamping ground for the use of the Native soldiery and camp followers. The present practice of defiling the ground *on all sides* of the camp must be strictly prohibited.

28th. These trenches are to be thoroughly filled in with earth by coolies before the rear guard quits the ground, and for those duties the coolies should be properly divided between the advance and main camps; and the officer on duty with the rear guard is to be required to report to the commanding officer that the trenches have been so filled in, and in the case of Native troops, that the "sites" specially selected have been properly cleaned.

29th. The commanding officer of every regiment or detachment on the march is required to place himself in direct communication with the tahsildar, or other responsible Native functionary at each encamping ground, to arrange that effectual measures are adopted by the Native local authorities for thoroughly sweeping and cleaning the whole area of each encamping ground immediately it is cleared of the camp, as well as the "sites" above referred to,

and for burning or removing to a suitable distance all collections of stable litter or refuse of every kind, &c., so as to make the ground perfectly fit for re-occupation by any troops marching by the same route.

30th. In the event of troops forming a standing camp for exercise or other duties, or halting more than the ordinary time at any camp ground, an additional deep trench should be dug at a distance of at least 200 yards from the camp, and to leeward of it, on the same conditions as the first trenches, for the reception of filth twice every day, coolies removing it from the camp trenches before mentioned, and depositing it in the deeper and distinct trench, as is done from the latrines in cantonments, and covering over with earth each day's accumulation.

31st. Inquiries are also to be made by the Quartermaster, or other responsible officer of the regiment, at each advance ground, from the same Native functionaries, as to whether the well water has been recently drawn, and the well in a state fit for use for drinking and other purposes; if not, effectual arrangements *must* be made for rendering it so *before* the arrival of the troops on the encamping ground.

32nd. In the Progress Reports furnished by regiments to the Quartermaster General of the Army, a note is in future to be entered that these orders have been strictly carried out.

33rd. The coolies to be employed are to be supplied by the Native local authorities on the requisition of the commanding officer, in such numbers as may be actually required. Payment will be made on contingent bills vouched in the usual manner, and forwarded to the Quartermaster General, to be disposed of as are all other contingent expenses on a march.

34th. The requisition for the coolies should be made by the commanding officer at the same time that he furnishes the civil authorities with the indent for supplies.

35th. In the event of difficulty being found in supplying coolies, a working party from the regiment must be told off to dig the trenches and fill them with earth, but not to move the excreta.

36th. Regimental intrenching tools are to be used.

37th. The following arrangements are ordered with reference to the movement of the families of troops, European and Native.

38th. Officers commanding regiments are allowed the discretion of sending the families in advance of the men in the afternoon, or of suffering them to follow the regiment, but the former course is to be preferred when it can be adopted without inconvenience.

39th. If the road is good, and the obstruction of rivers, &c., does not occur, the families may generally arrive soon after the regiment on the ground. When it is otherwise, it is better that the families should precede the men. But in either case the regimental artificers and a strong working party from the regiment, under a non-commissioned officer, should accompany the carts to assist them in case of need.

40th. The quartermaster of the regiment will mark out on the new ground a site for the families to leeward of the ground chosen for the camp of the men, and at some distance from it. Crowding of the bandies should be prohibited, and the bullocks should be removed to the rear. No carts ought to be allowed to leave the camp during the night, as they create disturbance, and obstruct the road for the regiment in the morning.

41st. The officer commanding will take particular care that unripe fruit and other sources of disease are not sold in the camp, nor brought to it. Frequent inspection of the bazaars should be ordered.

42nd. In order to maintain men and families in health, they should be encouraged to eat heartily, and to bring to speedy notice any attacks of diarrhoea or any premonitory symptoms of cholera, however slight.

Rules for the prevention of venereal diseases,

217. During the year under report, venereal diseases have diminished, but the rate of admissions is still high. Rules having the force of law, for the prevention of venereal disease, and for the control of prostitution at military stations, are about to be introduced, and a marked decrease in the disease may confidently be expected. At the station of Bangalore, where a system similar to that about to be introduced has been partially in force during 1866, the disease has sensibly diminished. In 1864 and 1865, prior to the introduction

of

of a system of registration and periodical examination of prostitutes, the admission-rate in hospital from this disease was 26·8 and 23·3 per cent. to strength. In 1866, the admission-rate had fallen to 10·8 per cent. of strength.

218. Instructions with regard to the choice of sites for barracks at hill stations, as laid down by the Army Sanitary Commission in England, have been issued as follows:—

Selection of sites for barracks.

“The best barrack sites are unquestionably those which occupy the summit level of the ground, and such should always be selected when possible. In proportion as sites are selected at a lower level, with higher ground rising close behind them, will sites even on the hills be found to be less and less healthy. Sites on terraces, constructed on slopes, should be avoided unless under the pressure of necessity. But where such sites must be occupied, care should be taken that the drainage of the higher ground should be completely cut off from the site, and that no part of the barrack room be nearer the slope than 20 or 30 feet. The ends of the rooms should face the slopes, but never the sides.”

219. Sites have been selected at all the chief military stations in this Presidency with reference to Government Order, No. 2,606, dated 13th July 1865, for the purpose of providing encamping grounds for the troops when attacked by cholera. The plans of these have all been submitted to me as they have been prepared, which has enabled me to express an opinion as to their sanitary features.

Cholera encamping grounds.

Wells have been sunk when a good water supply has not been available. The grounds selected are generally situated at a convenient distance from the cantonment, and well removed from villages and high roads.

The latter precaution has sometimes been attended with difficulty, but where this has been the case, localities have been chosen in which the neighbouring roads can be temporarily closed.

220. An important decision has been arrived at regarding the use which for the future, is to be made of the Wellington Barracks situated on the Neilgherry Hills. Acting upon the advice of his Excellency the Commander in Chief, it has been decided by the Government to adhere to the original use which was intended for Wellington as a general convalescent depôt for the whole British army serving in the Presidency of Madras.

Sanitaria.

As soon as barrack accommodation can be provided at Trichinopoly, the rules observed in Bengal in regard to Hill Sanitaria will be observed at Wellington, “that all soldiers who may present an appearance of debility, or whose lengthened residence in India has rendered a change of climate desirable, should be sent to these places. These men are divided into two classes:—

1st. Those whose health actually requires a change.

2nd. Those whom it may be considered desirable to send to the hills.

The barracks at Wellington will contain nearly 600 men, thus affording sufficient accommodation for the convalescents of the description to which a hill climate is beneficial of the British force stationed in this Presidency, which averages 13,000 men.

CHINDWARRAH.

It has been decided to retain the station of Chindwarrah, used as a sanitarium for the troops belonging to the Madras Presidency serving at Kamptee, in the Central Provinces.

It has been found to be very healthy, and is said to possess “all the advantages of an invalid station for patients suffering from debility, resulting from fevers and the relaxing effects of the great heat of the plains of Kamptee.”

An attempt was made in 1865 to establish a sanitarium for Kamptee at a place called Moothoor about 100 miles to the north, but it was found to be highly malarious, having in its vicinity the Dinoor valley covered with jungle and primeval forests, rendering it unhealthy for nine months of the year during the prevalence of the south-west winds.

RAMANDROOG.

This is the sanitarium used for British troops serving at Bellary. It is situated about 38 miles from that station, and forms part of the Sundoor range. It is 3,400 feet above the level of the sea, and 1,825 feet above the station of Bellary.

Although at so moderate an elevation it is free from malarious fever, and serves usefully as a convalescent depôt for men debilitated by a residence on the plains.

Hill diarrhœa is unknown; the congestion of internal organs, so common at Hill stations when the air is extremely rarified, is not witnessed here, and although is considerable from the hot low-lying station of Bellary, yet it is borne even by sickly invalids without discomfort. The thermometer never rises above a maximum of 84° and this only for a few hours in the day, while the mornings and evenings are pleasantly cool.

The military buildings consist of:—

I. A barrack capable of accommodating 55 unmarried men.

II. Married quarters capable of containing two non-commissioned officers and their families, and eight married soldiers and their families.

III. Hospital for 10 beds.

This sanitarium was inspected by me at the same time as the Bellary station. Certain improvements required for the comfort of convalescent soldiers were brought to the notice of Government, and attention was called to the reasons which have prevented the sick women and children of the troops stationed at Bellary availing themselves of the convalescent depôt.

The following is an extract from the report on Ramandroog:—

“With reference to the infrequency with which sick women and children resort to the Droog, the reasons are easily apparent. Sick women and children accompanying their husbands or fathers do not receive any allowance additional to that granted in cantonment, and this allowance is entirely inadequate to defray the cost of provisions at Ramandroog. For the families of sick soldiers at regimental head quarters, and whose families are left behind, half rations are provided gratuitously, so that the sick soldier has every inducement to leave his family behind.”

The journey is rendered unnecessarily fatiguing and is expensive, which also prevents the families availing themselves of the beneficial change, and which would save the lives of many of the sickly looking children seen in the family quarters at Bellary, where the death-rate among the children is very high.

New pattern tents.

221. During the year tents of an improved pattern have been supplied to European corps. These are intended to hold 16 men and are a great improvement on the old pattern tents which were allotted at the rate of 25 men per tent.

Plans of barracks.

222. During the course of the year numerous plans of barracks and other military buildings proposed to be erected at the various stations of the army, have been carefully considered in respect of the sanitary requirements of these buildings.

The following is a list of some of the more important plans which have been examined by me:

Solitary cells, Trichinopoly; subsidiary buildings, lavatories, latrines, &c., at Fort St. George, and St. Thomas' Mount; new cavalry barracks at Bangalore; hospital subsidiary buildings at Mangalore, and military prison at Wellington.

Quarters for warrant officers, Madras.

223. A very important improvement has been introduced by Government during the year as regards the accommodation given to the warrant officers and non-commissioned soldiers on staff employ at the Presidency.

On the 15th January 1866, the following extract from the Proceedings of the late Madras Sanitary Commission was submitted to Government, regarding the sanitary condition of this class of public servants.

“Read letters from Inspector General of Ordnance and Magazines and from the Commissary General transmitting nominal rolls, exhibiting the strength and mortality

mortality amongst the above-named classes, during a period of five years' continuous residence at Madras as follows :—

	Average Monthly Strength.	Number of Deaths in Five Years.
Warrant officers - - - - -	29	4
Non-commissioned officers - - - - -	21	6
Wives and children of the above. (No record kept)	- - -	37

Of these 24 have died from cholera, as exhibited in the following Table :—

Zymotic.				Constitutional.	Local.		Diseases of Women and Children.				TOTAL.
Miasmatic.				Tubercular.							
Fevers.	Dysentery.	Cholera.	Parotitis.	Phthisis.	Apoplexy.	Splenitis.	Miscarriage.	Convulsions.	Teething.	Unknown.	
3	3	24	1	2	2	1	1	4	2	4	47

“The remarkable preponderance of deaths from cholera, in relation to other miasmatic diseases, led to inquiry, and it was ascertained that about 42 heads of families reside in Black Town, John Pereira’s, &c., four in Chintadrepettah and Vepery, and four in public quarters; that their residences are from one to three miles distant; that their children are from one to eight in number; that taking the area of the sleeping accommodation, the average superficial space for each individual of all ages does not exceed 36 square feet; and finally, that the average rent paid by each family for their accommodation amounts to nearly 14 rupees. Moreover the drainage in these overcrowded parts is most defective.”

“The Commission further observe that in 22 cases the sanitary condition of the locality and the quarters is “good or fair;” in 16 cases “it is bad;” that in 25 cases “the water is scarce and bad, and drinking water is purchased;” and in four cases “water for all purposes has to be purchased.”

Upon these facts being laid before the Government, and after reference to the Governor General in Council, the Madras Government decided that six blocks, of two sets of quarters each should be erected on the north-western esplanade of the fortress between the Memorial and Patcheappah’s Halls, the front of each block to face the sea breeze, and to be inclosed within a small hedged-off compound.

These cottages, which have been carefully designed and are on a favourable site, will, it is hoped, ensure the health and comfort of the non-commissioned officers and their families.

224. During the year the important question of a pure water supply to the troops in various parts of the Presidency has engaged much attention. An analysis has been made of the water taken from the different wells in the cantonment of St. Thomas’s Mount by the chemical examiner at my instigation, and means have been adopted for improving the condition of those wells whose supply was found to be impure. Water supply to troops.

The storage of water for the use of the troops quartered in Fort Saint George has engaged the attention of Government on my recommendation, and means have been proposed for the filtration of water from the Seven Wells.

Steps are now being taken for the supply of Madras with water from the Red Hills, a distance of 10 miles. This scheme is alluded to in Section V. of this report.

The supply of water to the cantonment of Bellary has also had my special attention.

The total failure of the south-west monsoon caused great dearth of the usual water supply at this station, and it was at one time thought that it would be necessary to remove the native cavalry regiment stationed at Bellary. This was however not necessary, but it drew attention to the necessity of securing an abundant water supply at Bellary. Two projects have been submitted to Government, and their decision is only delayed until it is known whether the Toongabudra Irrigation Canal is to be at once commenced. This would render any special water project for the use of the troops unnecessary.

I carefully read all the papers connected with the project, and visited, in company with Major Moberly, the Collector Mr. Wedderburn, and Mr. Porter, the line of channel and the site of the reservoir tank, which are the most important parts of Mr. Porter's project.

The project originally known as Captain Fischer's, and modified by Mr. Assistant Engineer Porter, was estimated by Mr. Porter to cost 46,000 rupees.

Having this estimate before them, the Government in their Order No. 2,201, dated 23rd August 1866, sanctioned the immediate commencement of the work.

The Government, in arriving at this conclusion, were influenced by the importance of securing, at moderate cost, a good supply of water for the troops at Bellary, and especially by the state of distress in which the Bellary district was placed, which might be relieved by starting a large public work in the immediate neighbourhood of the town of Bellary, to which the poor were flocking.

On my arrival at Bellary, early in October, very little progress had been made in the work, and there was abundant other work available to relieve the able-bodied poor.

At the same time it appeared very doubtful whether the object of the work proposed by Mr. Porter, could be secured at the estimated cost.

Further examination of the project resulted in Mr. Porter furnishing a more complete estimate, raising the cost of the project to 68,000 rupees, and this is, in the opinion of the superintending engineer, an approximately exact estimate.

Mr. Porter has been directed to stop the small portion of work already commenced as soon as he shall have completed a channel about two miles long, and which will cost 6,500 rupees.

This part of his project had been commenced when I arrived at Bellary in October, and as its effect will be to improve the supply of Captain Fischer's tank, I thought that this portion of the work had better be completed, and in this opinion Mr. Wedderburn, the Collector, and Major Moberly, the superintending engineer, concurred.

I am not competent to give any opinion as to the actual results to be obtained from Mr. Porter's project, or to their value in proportion to the proposed outlay; but Major Moberly, the superintending engineer, is addressing the head of his department on Mr. Porter's project, now that the plans and estimates are completed.

Although I have not ventured to pronounce any opinion on Mr. Porter's project, I think it very desirable that the scheme of supplying Bellary with water should comprehend the supply of water both to the civil and military population. Mr. Porter's project, so far as I am able to judge, will amply supply the troops and probably the Cowle Bazaar, but it may be doubted whether his scheme, without further extension and increased expense, will supply the remaining portions of Bellary with water.

It should be remembered that if the Upper Bellary project is shortly commenced a great part of Mr. Porter's project, in fact all, except the tank reservoir (and this, when the water of the Toongabudra reaches Bellary, is useless) will be unnecessary. There is a similarity or rather identity of both schemes, except that Mr. Porter proposes, at a smaller cost, and depending only on a portion of the drainage of the surrounding country (which drainage is itself dependent on the more or less propitious season) to supply a part of Bellary and the military population with water, whereas the "Upper Bellary project" proposes, at an increased cost, but it is part of a great work, to achieve the supply of the whole of Bellary from a source, the Toongabudra river, which is unfailing.

Under

Under these circumstances it may appear to Government worthy of consideration whether it will not be better to abandon both the Fischer and Porter projects, and to request the Madras Irrigation Company to commence their channels at the nullah which crosses the Dharwar-road at the 8th mile stone, which will secure a large amount of drainage, and render safe the actual necessary water supply of Bellary.

This will be all part of the "Upper Bellary project"; and although the water supply of Bellary cannot be held to be complete until the water of the Toongabudra flows into Bellary, the above-mentioned channel will greatly relieve the pressure in the town of Bellary, and an unnecessary work will not have been constructed.

This channel will, until the Toongabudra project extends to Bellary, fulfil most of the conditions of Mr. Porter's project, and remain of permanent utility as a part of the general scheme both for the irrigation of the district and for the water supply of the military and civil population of Bellary.

225. In consequence of a representation from the medical officer in charge of Her Majesty's 1st Dragoon Guards, the question was raised as to whether on sanitary grounds the issue of porter on the line of march should be discontinued, and a dram of arrack substituted in its place. Rations for troops.

The substitution of a dram of spirits for a quart of malt liquor to troops on the line of march was advocated on two grounds, as will be seen in the following Report on the subject by the Committee assembled at Bangalore, to whom the question was referred by Government.

The Committee have carefully considered the opinions of the numerous commanding and medical officers upon the question of substituting a dram of spirits for a quart of malt liquor to British soldiers on the line of march.

The reasons advanced for this change are :

I. Because spirits require less carriage and less exertion on the part of the men, and thus the march would be facilitated and accelerated, and be rendered less fatiguing and costly.

II. Because malt liquor from being jolted on the march becomes unpalatable and unwholesome.

2nd. The evidence before the Committee at Bangalore shows that, under proper management on ordinary marches, the carriage of porter need not increase the exertions and fatigue of troops marching.

3rd. Officers of great experience and acknowledged reputation affirm that by sending the porter in advance of the march of regiments no extra fatigue is incurred, and that a few hours' rest of the porter in the shade obviates any disagreeable effect in the porter itself.

4th. It is conclusively established that good porter in small-sized casks can be carried great distances for the use of troops on the march, without becoming either unpalatable or unwholesome.

5th. A comparison of the opinions of officers of experience shows that the health of troops on the march either having porter and one dram of spirits per diem, or two drams of spirits per diem without porter, is equally good.

6th. The question so far stands thus: That troops can be marched in India without porter, and with the issue of two drams of arrack per diem, without any apparent injury to their health during the march; and there is the manifest advantage on the side of the arrack rations, that there would be an important saving in the cost of carriage.

7th. While estimating at its full value this economy in the cost of moving troops, the Committee are unanimous in recommending, except under very special circumstances, the continuance of the present system, according to which the British soldier receives a quart of malt liquor and one dram of arrack.

8th. There is before the Committee a large amount of evidence of officers of great experience, who most earnestly deprecate any increase in the amount of ardent spirits issued to soldiers in this country.

9th. They state that the effects of the proposed change would be to increase during the march the habit of dram drinking among soldiers.

10th. Although a moderate amount of alcohol during the twenty-four hours

is not absolutely injurious, an increase in this quantity creates the craving for stimulants peculiar to the drunkard.

11th. Excepting under circumstances of extraordinary fatigue, the English soldier in a tropical country would probably be healthier with malt liquor only; and the Committee are unanimous in thinking that the change suggested by Surgeon Major Jephson would be retrogressive, and in direct opposition to the recommendations of the Royal Commissioners on the health of British troops in India; recommendations founded on the evidence of a very large number of officers who had practical experience of the deleterious effect of the excessive use of ardent spirits in India.

12th. So strongly impressed are the Committee with the great advantage of reducing to a minimum the use of spirits in India, that they suggest that the cheap French and African wines might with advantage be imported for the use of the British soldier in India.

13th. This has been done successfully at Singapore with a battery of artillery, and with Her Majesty's 10th Regiment when stationed at the Cape.

14th. The remarks above recorded by the Committee have reference to the ordinary marches of troops in this Presidency.

Circumstances may arise when serious inconvenience would result from the carriage of porter.

15th. In such cases porter can undoubtedly be dispensed with without injury to the health of the troops; but the Committee suggest that in such cases coffee should be supplied to the troops at the close of the march in lieu of porter, leaving it to the discretion of the commanding officer to issue occasionally, when the troops are unusually harassed or fatigued, an extra dram of spirits.

Cooking ranges.

226. Cooking ranges have not been supplied to all the barracks, and it has yet to be determined which is the best description. Trials are being made at Bangalore between the Dumbleton and Duff's cooking ranges, but the results have not yet been received.

Bedding for troops.

227. It was proposed by the late Sanitary Commission that a trial should be made of the *Numda** mattress in barracks used by the troops in the Bombay Presidency. This Government, however, did not consider the reports made by them sufficiently favourable to call for any measures of experiment.

The quilt lately forming a part of the bedding issued to European troops has been replaced by a second blanket.

During the years a new form of field hammock, suggested by Captain McGwire, has been ordered to be tried and reported upon when received.

Iron cots have been sanctioned for use throughout the Presidency amongst European troops; these have been supplied to the military hospitals, but the supply to barracks has not been completed. No decision has been arrived at as to the material to be used for the mattresses on these cots. The present bedding is quite unsuited to the iron cots, and renders the men very uncomfortable.

On the 2nd of September the issue of two palliasses for each iron cot with a supply of 20 lbs. of straw per palliasse was ordered, which can only be looked in the light of a temporary arrangement.

I am still of opinion that the *Numda* in use in Bombay is the best mattress that can be employed. Next to these excellent substitutes for mattresses in a warm climate, I would use mattresses filled with coir (the fibre of the coconut), which is a cheap material with all the advantages of horsehair.

Lighting of barracks.

228. The attention of Government has been directed during the year to the better lighting of barrack rooms at night.

The Fort Saint George Barracks are the only ones at present which are lit with gas. The Commissary General in March last submitted a Report to Government on the quality of the various oils used in different parts of the Presidency.

Complaints as to the bad quality of the oil used in lighting the different barracks have been frequently made by regimental authorities.

The

* The "*Numda*" mattress consists of a thick felt made to fit the bed. It is sufficiently comfortable to supply the place of an ordinary mattress, is easily kept clean, can be rolled up, and is easily carried.

The Commissary General states that orders have been issued for the supply of a better description of oil.

This question of lighting seriously affects the comfort of the soldier, and is of more importance until every barrack in the Presidency occupied by European soldiers is furnished with dining, reading, and recreation rooms.

These are sanctioned, but a considerable time must elapse before the entire accommodation to which the soldiers are entitled under the new regulations on the subject can be provided.

Some part of the drunkenness and vice which prevails in the British Army in India, must be attributed to the discomfort experienced in barracks.

229. During the year, Government have issued orders that kuskus tatties are to be supplied to the family quarters in those stations where they are allowed to soldiers in barracks. Cooling barracks.

230. The following conclusions of the Government of India on the principles to be attended to in the construction of hospitals for European troops have been circulated to the Department of Public Works for general adoption. Principles of hospital construction.

No. 1.—*Proposal.*

That, as a rule, separate hospitals must continue to be provided for every regiment or detachment; and that general hospitals should, in special cases only, be constructed for the troops serving in India. Regimental and general hospitals.

Conclusion of the Government of India.

The Government of India considers that, as a rule, separate hospitals must continue to be provided for every regiment or detachment, and that a general hospital is not, unless under exceptional circumstances, required in time of peace.

No. 2.—*Proposal.*

That hospital accommodation be provided to the following extent for the units of each arm of the service :— Extent of accommodation.

	Men.	Women.
Regiment of infantry - - -	110	20
Regiment of cavalry - - -	62	14
Light field battery of artillery -	20	4
Garrison company of artillery -	10	4

The above numbers are in the proportion of 12 per cent. of strength, when the latter exceeds 400 men, and of 12 to 15 per cent. for smaller detachments.

Conclusion of the Government of India.

After a careful examination of the hospital returns for the last few years, the Government of India is of opinion that it will suffice to provide hospital accommodation, at the generality of stations, according to the following scale :—

At 10 per cent. on full regulation strength, for regiments and for detachments exceeding 400 men in number.

At 12 per cent. for detachments under 400 men.

At the stations in the Bengal presidency, noted in the margin, which have proved to be more unhealthy than others, the above rates may be thus increased, viz., 12 per cent. on full regulation strength for regiments, and for detachments Morar, Saugor, Delhi, Agra, Peshwar.

detachments exceeding 400 in number. Twelve to 15 per cent. on strength for smaller detachments than 400 men.

The increased proportions will also apply to unhealthy stations in the Bombay and Madras Presidencies.

The complement for each arm of the service will be as follows :—

	At unhealthy Stations.	At healthy Stations.
	Men.	Men.
Infantry - - - - -	110	92
Cavalry - - - - -	62	50
Battery of artillery - - -	20	18
Garrison company of artillery -	10	10

The extent of accommodation for women is still under consideration, with reference to a late order, which directs that women shall, in all practicable cases, receive medical treatment in their own quarters. On this point, further instructions will be issued.

No. 3.—*Proposal.*

Number of floors
in the plains.

That all regimental or detachment hospitals, which may hereafter be constructed in the plains of India, shall be double-storied buildings, in which the whole of the wards for the sick, together with a certain necessary amount of subsidiary accommodation, shall be arranged in the upper floors, and the day-room, administrative offices, quarters for medical subordinates, &c. &c., shall be provided in the lower stories; further, that the kitchen, guard room, dead-house, shed for ambulance carts, privy and lavatory for general use, shall be in out-buildings.

Conclusion of the Government of India.

Looking to the great expense that is involved in the future provision of hospital accommodation throughout India to the excess of space for auxiliary purposes in the lower floors that will be the consequence of the construction of the buildings unnecessarily large, to the fact that the proportion of sick only exceeds seven and eight per cent. of strength for a brief period during each year, and lastly, to the positive advantage there may be in having accommodation in the lower floor for a small number of certain classes of patients, the Government of India considers that it is not necessary to provide accommodation in the upper floor for more than three-fourths of the total complement of patients, the remaining one-fourth being arranged for in well-raised and well-ventilated lower floors. By such an arrangement the actual necessity of placing patients in the lower floor will rarely occur.

No. 4.—*Proposal.*

Number of floors
at hill stations.

That at hill stations the same description of hospital be provided, but that, when there is restricted space, accommodation for a portion of the patients may be in the lower floor.

Conclusion of the Government of India.

The Government of India does not anticipate any difficulty in the proper ventilation of lower floors, and, for the reasons given in the preceding conclusion, approves generally of this proposal. A larger proportion than one-fourth of the total complement of patients may, however, be provided for in the lower floors, if such an arrangement should prove convenient with reference to existing auxiliary accommodation.

No. 5.—*Proposal.*

That buildings of more than two stories are only admissible in localities where a certain amount of accommodation is absolutely required, and where, owing to restriction of space, it cannot be provided without recourse being had to a third, or perhaps a fourth, story.

Limit to number of floors.

Conclusion of the Government of India.

The Government of India agrees to the proposal.

No. 6.—*Proposal.*

That the subdivision of a hospital into a number of small buildings is objectionable, because it tends to unnecessary expense, to the occupation of too great space, and to the overtaxing of the powers of the establishments; and further, that it is not necessary, in military hospitals, which are rarely fully occupied, in which the generality of cases treated are not of a serious character, and in which the whole of the sick have liberal accommodation provided for them in upper floors.

Subdivision of buildings.

Conclusion of the Government of India.

The Government of India approves of the proposal, as a subdivision of a hospital into a number of very small buildings is objectionable on sanitary, administrative, and financial grounds.

The general arrangement of the approved hospital specimen plans, which will be presently adverted to, will, it is believed, meet generally the views of the Home Commission.

No. 7.—*Proposal.*

That there can be little or no risk in placing 50 or 60 sick in one building, especially if the building be so designed that it shall not be covered by one continuous roof, but shall be separated into sections, each of which shall have as nearly as possible an independent ventilation.

Number of sick under one roof.

Conclusion of the Government of India.

This proposal is approved of by the Government of India.

No. 8.—*Proposal.*

That the number of buildings for each arm of the service should be as follows :—

For a regiment of infantry : two buildings for the men, and one building for the women and children.

For a regiment of cavalry :* one building for the men, and another for the women and children.

For one or two batteries of artillery : a single building for both men and women ; for three or four batteries, two buildings, and so on ; the rule being that one building shall only serve for two batteries. In the event, however, of its being necessary to keep the sick of each battery entirely separated from each other, then each battery should have its own separate building.

Number of buildings for each of the units.

Conclusion of the Government of India.

The Government of India approves also of this proposal, but considers that a separate hospital should be provided for the women whenever the number of female patients amounts to 10 or upwards.

No. 9.—

* If a greater classification of sick is required than can be arranged for in five wards, a second building should be given.

No. 9.—*Proposal.*

Component parts
of a hospital.

That the component parts of every military hospital shall consist of—

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Wards for the sick and convalescents. 2. Ward offices, viz., superintendent's rooms, sculleries, privies, and urinaries, bath, and ablution-rooms. 3. Day-rooms for sick and convalescents. 4. Quarters for medical subordinates. 5. Quarters for hospital serjeant. 6. Quarters for hospital orderlies. 7. Store-rooms. | <ol style="list-style-type: none"> 8. Surgery. 9. Receiving-room. 10. Out-door kitchen. 11. Out-door lavatory (with shower bath.) 12. Out-door privy. 13. Guard-room. 14. Shed for ambulance carts, hearse, &c, &c. 15. Dead-house. 16. Enclosure wall or railing. |
|---|---|

Conclusion of the Government of India.

The Government of India considers that a separate dispensary is unnecessary, and that one room will suffice for a combined surgery and dispensary. The following, however, should be added to the above list:—

1. Houses for native establishment.
2. Laundry.
3. A small detached building for contagious diseases.

No. 10.—*Proposal.*

Subdivision of
wards.

That the objections to a multiplicity of buildings apply also to a multiplicity of wards, or, in other words, to the subdivision of the sick amongst a number of small wards; and further, that the classification of diseases and proper subdivision of the sick will be sufficiently met by the following numbers of wards in each description of hospital:—

Infantry hospital: five large and two small wards for the men, and one large and one or two small wards for the women.

Cavalry hospital: three large and two small wards for the men, and one large and one small ward for the women.

Artillery (each battery): two large and one small ward for the men, and one ward for the women.

Conclusion of the Government of India.

The Government of India approves of the general principle involved in the proposal, and considers that the proposed numbers of wards for each description of hospital is satisfactory, with reference to hospitals intended to accommodate the whole of the patients in upper storied rooms. The number of wards must, however, necessarily be somewhat increased when the lower floors are in part to be occupied by patients. The specimen plans which accompany this circular will illustrate the increase.

No. 11.—*Proposal.*

Wards for infectious diseases, ophthalmia, delirium tremens, insanity.

That a detached building for infectious diseases does not seem necessary for any hospital, and certainly not for hospitals smaller than those for a regiment of infantry or cavalry; but if its provision be decided upon, that a single-storied building, well raised, should answer the purpose, and that one such building should suffice for a whole station instead of separate ones being attached to each hospital.

Conclusion of the Government of India.

After carefully weighing all that has been advanced on this very important point, the Government of India has come to the conclusion that it is not necessary to add to regimental hospitals, detached buildings for contagious or other special diseases upon the extensive scale advocated by many. Such a measure would

would involve the provision of an excessive amount of hospital accommodation generally.

One or two small detached wards, however, in which a few isolated cases may occasionally be accommodated, will, no doubt, often prove very useful. The Government of India therefore authorises for each hospital of regiments of cavalry or infantry, the provision of a well-raised single-storied building to contain two wards, each ward being sufficiently large for two patients.

The wards are to be understood as intended especially for contagious diseases, but when there is immunity from such diseases they may be occupied by insanes, prisoners, or men suffering under delirium tremens.

Ophthalmic patients may be accommodated in the hospital proper, in a ward to which a separate lavatory is attached.

For smaller hospitals a detached building for special diseases will not be allowed.

No. 12.—*Proposal.*

That the following is a suitable distribution of beds in the wards of the several hospitals :—

Distribution of
beds in the wards.

	Beds.		Beds.
Infantry Male Hospital :		Cavalry Female Hospital :	
4 wards of 24 beds each - - -	96	1 ward of - - - - -	12
1 ward of 12 beds each - - -	12	1 ward of - - - - -	2
2 wards of 2 beds each - - -	4		
Total - -	112	Total - -	14
Infantry Female Hospital :		Artillery Hospital for a Light Field Battery :	
1 ward of 18 beds - - - -	18	1 ward for males - - - -	12
2 wards of 2 beds each - - -	4	1 ward for males - - - -	6
Total - -	22	1 ward for males - - - -	2
Cavalry Male Hospital :		1 ward for females - - - -	4
2 wards of 24 beds each - - -	48	Total - -	24
1 ward of 10 beds - - - -	10		
2 wards of 2 beds each - - -	4		
Total - -	62		

Conclusion of the Government of India.

The conclusion on proposal No. 10 will also apply generally to this proposal. The Government of India approves of the proposed distribution of beds for hospitals intended to accommodate the whole of the patients in the upper floor. The specimen plan will illustrate the necessary raised distribution when the lower floors are to be in part occupied by the sick.

No. 13.—*Proposal.*

That the beds be arranged on the opposite sides of the room, between the doors, and placed either parallel to the walls at the distance of four feet from them, or with their heads to the walls ; that not more than two beds be placed in the wall space between two doors on the same side of the ward ; that there be not less than half as many doors in the length of the ward as there are beds ; and that the doors be in equal numbers on the opposite sides of the wards.

Arrangement of
beds.

Conclusion of the Government of India.

The Government of India approves of the proposal generally.

For hospitals in the plains of India, the side opening should, as a rule, be doors. At hill stations, and in certain localities in the plains, both doors and windows

windows may be resorted to, the proportion of each being regulated by local conditions of climate, &c., &c.

In parts of the country in which the climate is exceptionally hot throughout the year, it may perhaps be sometimes desirable so to arrange the wards that there shall only be one bed between two doors, or between a window and a door.

Regarding the proposed parallel arrangement of beds, it is not at present necessary that the Government of India should give any orders.

No. 14.—*Proposal.*

That all large wards be 26 feet in width, and 21 feet in height to wall-plate, and that the wall space per bed in them be 10 feet, thus giving an area of 130 superficial feet per bed; that the wall space per bed in wards for convalescents be $7\frac{1}{2}$ feet only, which length will give an area of $97\frac{1}{2}$ superficial feet per bed; and that in small wards, the area per bed may average from 150 to 180 superficial feet per bed.

Conclusion of the Government of India.

The Government of India considers that the space in the main wards should be as follows:—

In the plains—

10 running feet per bed.

24 „ „ width of ward.

20 „ „ height of wards from floor to wall-plate.

These dimensions give 120 superficial feet, and 2,400 cubic feet per bed.

When the lower floor is not intended to be occupied by patients, the height from floor to wall-plate to be 16 feet.

In hill stations—

$8\frac{1}{2}$ running feet per bed.

24 „ „ width of ward.

Height of wards 16 to 18 feet, according to the altitude of the station.

These dimensions give 102 superficial feet, and 1,632 or 1,836 cubic feet per bed.

The space in the small wards should average, as proposed, from 150 to 180 superficial feet per bed; but $7\frac{1}{2}$ running feet, and 90 superficial feet per bed, will suffice for the large convalescent wards for regiments.

No. 15.—*Proposal.*

That an attendants' room and a scullery be attached to every large ward, and that it be an object to arrange the position of these offices so that they may also be within easy access of the small wards.

Conclusion of the Government of India.

The Government of India agrees to the proposal.

No. 16.—*Proposal.*

That a lavatory and privy be also attached at the ends of the buildings, to each large ward, but cut off from it by a separately ventilated passage or lobby, or by both; and that the general plan of privy authorised for barracks be adopted in preference to water-closets or water-latrines.

Conclusion of the Government of India.

The Government of India approves of the proposal.

No. 17.—*Proposal.*

That one or two small privies and lavatories be provided for the use of the patients in the small wards, and of the attendants.

Dimensions of
wards, floor space
for bed, &c., &c.

Attendants' rooms
and sculleries.

Lavatories and
privies for large
wards.

Privies and lava-
tories for small
wards.

Conclusion of the Government of India.

The Government of India approves of the proposal.

No. 18.—*Proposal.*

That day-rooms be allowed for the sick and the convalescents ; and that in the large hospitals the dining-rooms and recreation-rooms for the sick be kept separate. Day-rooms.

Conclusion of the Government of India.

The Government of India concurs generally in the proposal, but does not consider it necessary to provide separate apartments for messing and recreation, unless there be ample spare space in the lower floors after providing for all other auxiliary purposes (as in the case of the regimental hospital, in which all the sick are provided for in the upper story).

No. 19.—*Proposal.*

That the day-rooms, the quarters for medical subordinates, and for hospital serjeant and orderlies, also the store-rooms, surgery, and receiving-room, be arranged for in the lower story of the hospital. Occupation of lower floors.

Conclusion of the Government of India.

The Government of India agrees to the proposal. The provision of the detached accommodation proposed by the Government North-Western Provinces, and the Sanitary Commission for Madras, would lead to an increase of expense which seems not to be called for.

No. 20.—*Proposal.*

That the hospital kitchen, a privy and lavatory for general use, the guard-room, a shed for ambulance carts, &c., and dead-house be provided in out-buildings. Out-buildings.

Conclusion of the Government of India.

The Government of India approves of the proposal, also of the recommendation of the Sanitary Commission for Bengal, in regard to subdivision of privy and lavatory. A separate cook-room for the attendants does not, however, appear to be necessary. Shelter for the horses and buggies of the medical officers will be provided in the shed for ambulance carts, hearse, doolies, &c., &c.

No. 21.—*Proposal.*

That the hospital enclosure be either a brick-wall $2\frac{1}{2}$ or three feet high, or an iron railing $4\frac{1}{2}$ feet in height, and that an iron railing be always adopted when the hospital is within 100 feet of the enclosure. Enclosures.

Conclusion of the Government of India.

The proposal is agreed to by the Government of India.

No. 22.—*Proposal.*

That the several proposed plans of hospitals be approved. Plans.

Conclusion of the Government of India.

The Government of India approves generally of all the plans, and also of the accompanying additional specimen plans that have been prepared by Lieutenant Colonel Crommelin to meet the conclusions of the Government of India, in regard to the partial occupation of the lower floors by patients, and to the diminution of the complement of sick to be provided for, to 10 per cent. of strength.

The out-buildings on plan No. 1 are in the intervals between the two hospitals, and not to windward of them. The covered passages are low and arcaded, and would not interfere with ventilation. The distance between the end ward offices

and the wards appears sufficient. A greater separation would much lessen the convenience of these offices.

The plan proposed by the Sanitary Commission for Madras is considered objectionable in regard to the following points:—*First*, the detached block containing the quarters of the apothecary, hospital serjeant, &c., is considered unnecessary, and from its projection would tend to obstruct the ventilation of the two wings of the hospital; *second*, an operating theatre, a record-room and medical officers' committee-room are not deemed requisite for regimental hospitals; *third*, the position of the privies and lavatories, immediately behind the centre of each block, is not thought satisfactory, as these would constantly be to the windward of the wards; *fourth*, there are no sculleries or rooms for ward attendants, and no quarters for medical subordinates, except the single set for the apothecary; *fifth*, the small wards for two beds each have no thorough ventilation, and the large wards have no end ventilation; *sixth*, there is not a sufficient arrangement provided for separating the convalescents from the sick.

The principle of construction recommended by the Government of Bengal is not approved by the Government of India, as it is considered that a building constructed according to the proposed plan could never be properly ventilated.

Four specimen plans of hospitals for male patients, and one enlarged plan of end-ward offices, are circulated for information and guidance.

A plan of regimental hospital for female patients will be issued as soon as the scale of accommodation to be provided for this class of patients has been settled.

Plans of detached wards for special diseases, and of out-buildings, such as privy, lavatory, cook-room, dead-house, shed for ambulance carts, &c., &c., will also follow.

New military hospital, Bangalore.

231. During the year, it has been decided that the hospital accommodation for the whole of the European troops at Bangalore should be provided for on the race-course. The hospital attached to the European infantry barrack, situated $1\frac{3}{4}$ mile away from the race-course, has long since been considered unfit for its present purpose; but it at first seemed desirable that the regimental hospital should be placed in close conjunction with the barracks on the grounds of general discipline and supervision, and in order to avoid having to transport patients suffering from acute disease so far away.

The site, however, of the present infantry hospital is very objectionable, and the fact of its not being far from a portion of the native and Ulsoor tanks, and a variety of "old and tainted buildings and drains" has been considered by high authority sufficient to condemn it.

It was found that "some patients belonging to the 16th Lancers, whose cases were found to be obstinate or retrogressive in the old hospital, had been removed without difficulty to the race-course, where they were found to recover rapidly in the purer air of this locality."

His Excellency the Commander in Chief, fully concurring in the above proposed arrangement, recommends that the present hospital should be abandoned as soon as possible, a step which is shortly to be carried.

New military hospital, Madras.

232. * After a full consideration of the various opinions and recommendations which have been from time to time laid before Government on the subject of providing efficient hospital accommodation in the Presidency town, the Government have arrived at the conclusion that the most desirable arrangement will be to erect a separate native hospital for military patients, and, abandoning the project of building a separate native hospital which was sanctioned in 1864, to convert the present general hospital, as proposed by myself, into a civil hospital for Europeans, East Indians, and natives.

A committee assembled on the 13th September pursuant to orders of Government, No. 818, dated 15th August 1866, and selected, as a site for the new military hospital, the triangular piece of ground on the esplanade adjoining the parade ground extending behind the statue of Sir Thomas Munro to the burying-ground, and bounded by the three roads.

The

* Vide Proceedings of Government, Military Department, dated 15th August 1866, No. 818.

The selection of this site was made subject to the ground being thoroughly drained and the graveyards in the vicinity being closed.

This site was approved of by Government, but there being some doubt as to the feasibility of an early removal of the burial ground alluded to, the question of the selection of a site has been deferred.

233. Some extensive alterations and improvements in accordance with the suggestion of the late sanitary commission have been undertaken during the year, which will, when completed, greatly improve the sanitary condition of the building. Hospital at Saint Thomas' Mount.

The female hospital, which was before situated in the compound of the main building which overlooks it, is to be removed to another site.

Many of the useless buildings which now block up the compound and obstruct the ventilation of the lower wards are also to be removed.

SECTION II.

SICKNESS AND MORTALITY AMONGST NATIVE TROOPS.

234. THE strength of the Native army according to the Adjutant General's return was 32,121 on the 1st of January 1866, and on the 1st January 1867, 31,979, showing a decrease during the year of 142 men. Strength of Native Army, Adjutant General's Returns.

235. During the year, the Native army received additions to its strength of 1,242 recruits; 255 by transfers; 23 joined from desertion; and by other causes 462. Increase.

236. It decreased by 297 summary dismissals; by desertions, 61; by deaths, 526; and by pensioning and other causes, 1,240. Decrease.

237. The average strength of the Native army serving in the Madras Presidency, as shown by the medical returns,* amounts to 28,783, out of which there have been admitted into hospital 23,948 men; the daily average sick has been 924·36; the total mortality has been 387, of which 353 deaths occurred in hospital. Strength of Army shown by Medical Returns.

238. The following statement shows the rate of sickness and mortality per mille for 1866. Sickness and Mortality.

Rate per Mille of Strength.										
Admissions	-	-	-	-	-	-	-	-	-	832·1
Daily sick	-	-	-	-	-	-	-	-	-	32·1
Deaths in hospital	-	-	-	-	-	-	-	-	-	12·2

Including the deaths shown by the medical returns as having occurred out of hospital, the death rate is 13·4 per mille.

It will be observed that a considerable discrepancy exists between the strength of the Native army as shown by the Adjutant General's returns and the average strength

* These include the Quarterly Division Returns and the Weekly Stational Returns from the Straits and Port Blair. The Regiments serving at Saugor and Jubbulpore are not included.

strength of the medical returns, and also that the total mortality as shown by the former is 139 deaths in excess of the latter.

Present statistics of Native army faulty.

239. The reasons for this are to be found in the great difficulties which exist in obtaining accurate statistics from the Native army, in addition to those which were enumerated at the commencement of the report on the health of the British troops.

These have been alluded to in the Bengal Sanitary Commissioner's Report, and precisely the same state of things vitiates the statistical returns of the Native army in this Presidency.

The strength of Native corps is subject to great variations during the year on account of the large number of men absent on furlough; this is especially the case with regiments returning from foreign service in Burmah and the Straits.

A large number are also sent away on sick leave.

The weekly medical returns in many instances only show the strength of the men present at head quarters; and the deaths which occur amongst the men on furlough and sick leave are not unfrequently left unrecorded in the medical returns. The daily average sick of the army is also considerably affected by men being sent away to their homes for change of air.

To ensure the trustworthiness of future returns, it is necessary that steps should be taken to rectify the error which must occur in the statistics of the Native army, if the above facts are overlooked.

Taking the strength of the Native army and the number of deaths as shown by the Adjutant General's returns, the total mortality of the Madras army stands at 16·3 per mille of strength, which may be taken as the true rate of deaths in and out of hospital during the year 1866.

From this it would appear, that nearly 4 per mille of the deaths in the Native army during the year 1866 have occurred out of hospital.

Troops serving in the army division alone considered.

240. For the same reasons which are given in the European portion of this statistical report, the health and mortality of the Native troops serving in the eight divisions of the army, will alone be considered in the following Tables, excluding those serving in the Straits and Saugor circle. In this way, comparisons with former years can be more readily and accurately made, while the total rate of sickness and mortality of the army is only affected to the extent of a few decimal points per mille.

The health of the Native troops serving in the Straits is considered separately from the statinal returns which have been received from that part of the Presidency.

Sickness and mortality.

241. The average strength of the Native troops serving in the eight grand divisions of the Madras Presidency during 1866, amounts to 27,217 men. The total admissions into hospital are 22,135; the daily average sick, 869·5; and the total deaths 375, of which 33 occurred out of hospital.

242. The number of men invalided as shown by the medical returns amounts to 124.

Sickness and mortality of previous years.

The following statement shows the rate of sickness and mortality of the Madras army contrasted with former years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	968·4	658·2	694·7	688·1	761·7	811·2	770·8	813·2
Daily sick - - -	44·6	30·5	23·9	19·2	26·6	32·3	30·4	31·9
Deaths in hospital -	14·5	10·2	9·3	9·4	12·5	14·6	11·8	12·5
Deaths out of hospital -	-	-	-	·7	·6	1·4	·8	1·2
Average Strength -		37,975	32,069	30,505	28,116	24,608	32,788·5	27,217

From this it appears that the average strength, as shown by the medical returns, is rather below the six year average, although it is very much the same as that for the two previous years.

The

The admissions are slightly in excess of last year and that of the average. The daily average sick is also slightly in excess of the average although slightly below that of 1865. The rate of mortality in hospital is lower than that of last year, but slightly in excess of the six year average. It will be observed that this rate fluctuates considerably in previous years. It ranges from 9·3 per mille in 1862 to 14·6 in 1865.

243. It must be clearly remembered from what has been stated above, that these figures *do not represent the death rate* of the Native army, but only that of the *men present at head quarters*. Deaths in the Native army.

It may be safely stated that more than one-fifth of the deaths in the Native army occurs amongst men absent on leave from their regiments. During the past year it has been shown that they amount to nearly a quarter of the total mortality.

At present when a man dies on furlough, his death is simply reported to regimental head quarters, but the cause of his decease is generally not known.

In order that our Native army statistics may be made comparable with those of the British army, it is necessary that the entire strength of the regiment should be shown, as well as that of men present at head quarters; also that the causes of death amongst men absent from head quarters should be recorded.

From the former element the *true* death rate of the corps may be calculated; from the latter together with the number absent on *sick leave*, the *true* admission and daily sick rate may be estimated.

244. The following statement shows the rate of admissions into hospital from the principal diseases which have contributed to make up the sickness during the year 1866. Admissions from special diseases.

ADMISSIONS PER MILLE OF AVERAGE STRENGTH.

Small Pox.	Chicken Pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Continued.	Rheumatism.	Venereal Diseases.	Parasitic Diseases.*	Guinea Worm.	Dropsy.†	Phthisis Pulmonalis.	Respiratory Diseases.	Splenitis.	Hepatitis.	Abscess and Ulcers.‡	Atrophia and Anæmia.	Wounds and Accidents.	All other Causes.
2·4	3·6	24·3	28·4	32·5	7·4	369·3	10·7	22·2	47·4	24·2	22·1	4·7	2·5	1·2	17·3	0·6	1·7	66·2	16·1	47·1	60·2

* Exclusive of Guinea Worm. † Including Anasarca and Ascites. ‡ Including Furunculus.

From this and Table II., Appendix, page 30, it will be observed that by far the largest number of admissions is made up by cases of intermittent fever (10,053), which have been admitted at the rate of 369·3 per mille. A large number of these are doubtless cases of febricula. Next in order of frequency come abscess and ulcers (1,802), rheumatism (1,292), wounds and accidents (1,283), diarrhoea (886), and dysentery (773).

Parasitic diseases, exclusive of guinea-worm, amount to 604, and the latter contributes 129 cases.

Venereal diseases only amount to 660, or 24·2 per mille.

245. The admissions from cholera (which are noticed elsewhere, together with other special diseases,) amount to 204 cases, which may be considered a fair average number. The deaths from this disease have been 95, or nearly one-half of those admitted from it. Admissions from cholera.

The small number of cases of hepatitis (47) admitted is worthy of notice, when contrasted with the European returns.

Deaths from special diseases.
* At head quarters chiefly.

246. The following statement shows the principal diseases which have contributed to make up the death rate of the native troops in and out * of hospital during the year 1866.

DEATHS PER MILLE OF AVERAGE STRENGTH.																	
Small Pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Continua.	Rheumatism.	Dropsy.	Phthisis.	Heart Diseases.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents.†	Insolatio.	All other Causes.
0·1	0·8	0·8	3·4	1·4	0·5	0·1	0·4	0·4	0·5	0·4	0·8	0·07	0·1	0·8	0·1	0·03	2·4

† Exclusive of Insolatio.

Taking the deaths in the order of frequency, it is to be observed that cholera has contributed the greatest number (95), then intermittent fever (40), dysentery (24), diarrhoea (23), atrophía and anæmia (22), and respiratory diseases (22). Remittent fever contributes 15 deaths, and phthisis, dropsy, and rheumatism, 14, 13, and 12 respectively.
It is to be noticed that one death from insolatio is recorded in the second quarter.

Sickness and mortality compared with other Presidencies.

247. The following Tables, compiled from statements shown in the Bengal Sanitary Commissioner's Report, and from the annual returns of the Inspector General, Medical Department, Bombay, afford us an opportunity of contrasting the sickness and mortality of the Native army of the three Presidencies for previous periods.

BENGAL.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.
Admissions - - - -	- -	1,169	1,385	1,477	1,389	1,475	1,379
Daily sick - - - -	- -	40·1	44·8	46·2	43·0	44·8	43·7
Deaths in hospital - - -	- -	16·8	14·0	14·6	12·7	14·7	14·5

BOMBAY.

Admissions - - - -	1,178	962	1,002	1,027	1,000	1,065	1,039
Daily sick - - - -	—	—	—	—	—	—	—
Deaths in hospital - - -	9·8	8·8	10·3	9·08	15·6	15·0	11·4

From these it appears that the admission, daily sick, and mortality rates are higher in the Bengal Presidency than amongst the troops serving in Madras.
In Bombay the admission rate is not so high as in Bengal, but greater than that which obtains in Madras. Its mortality rate, as far as the deaths in hospital show, is lower than either of the two other Presidencies.

CENTRE DIVISION.

248. The following is a list of stations occupied by native troops, composing this division :—

Madras, Vellore,	Saint Thomas' Mount, Palaveram.
---------------------	------------------------------------

The 16th Regiment, N. I., embarked for Burmah from Madras, and the 8th Regiment, N. I., arrived during the first quarter.

249. The

249. The average strength of the Native troops serving in this division, in addition to those marching, has been 3,406 made up by the corps as per margin. Sickness and mortality.

The total admissions into hospital have been 2,076, and the daily average sick 100·9.

The total deaths shown in the divisional returns amount to 71, of which nine occurred out of hospital; one of the latter is a case of cholera, which took place in the Northern Division, of a Sepoy belonging to the 6th Regiment, Native Infantry.

The number of men invalided during the year in this division amounts to 84.

250. The following statement shows the rates of sickness and mortality in this division, as contrasted with former years. Contrast with former years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - - - -	1,225·4	771·2	610·4	536·5	578·2	565·9	715·2	609·5
Daily sick - - - - -	83·1	51·7	30·7	24·3	29·3	23·9	40·7	29·3
Deaths in hospital - - -	21·5	14·3	11·6	5·0	12·4	21·1	14·1	18·2
Admissions from cholera - -	10·3	4·1	9·1	3·8	6·5	29·8	10·0	17·3
Deaths from cholera - - -	4·1	1·4	4·3	0·9	3·2	11·9	4·1	9·1
Average Strength - - -	3,860	4,822	4,384	4,141	3,692	3,585	4,080·6	3,406

The average strength of native troops serving in this division has decreased during the past year being lower than any year since 1860.

The admissions into hospital are slightly in excess of the past three years, although a decrease of 105·7 per mille is shown on the six years' average.

The daily sick rate is more than 10 per mille below the average. During the year 1860 this element appears to have reached the very high rate of 83·1 which is higher than any of the subsequent periods.

Compared with the years 1862, 1864, the rate of the past year is nearly equal, but it is higher than the previous year and that of 1863. The death rate in hospital in the division is lower than that of last year, although slightly in excess of the average. It will be seen that the rate of mortality has fluctuated very considerably in former years, being as low as five per mille in 1863 and as high as 21·5 in 1860.

A large number of admissions and deaths from cholera took place in 1865.

251. The principal diseases which have made up the admissions in hospital, are as follows :— Admissions.

Intermittent fever contributes 530 cases or 156·6 per mille; abscess and ulcers, 212 or 62·2 per mille; diarrhœa, 139 or 40·8 per mille; dysentery, 101 or 29·6 per mille; and rheumatism, 161 or 47·2 per mille. Venereal diseases amount to 76 or 22·3 per mille.

Cases of guinea-worm amount to 61 or 17·9 per mille, in addition to 66 admissions from other parasitic diseases.

252. The deaths in this division are as follows :—

Deaths.

Cholera (31) 9·1 per mille; intermittent fever, diarrhœa and respiratory diseases, each 4, or 1·1 per mille; dysentery, remittent fever, dropsy, phthisis and heart disease, each 2; continued fever and atrophy, each contribute 1.

FORT SAINT GEORGE.

253. The strength of this garrison made up by the corps as per margin, has amounted, during the years 1866 to 2,019. The admissions into hospital have been 1,116; the daily average sick, 3,867; the deaths in hospital 47, and the deaths outside 1. Sickness and mortality.

His Excellency the Governor's Body Guard.
2nd Regiment, N. I. | 3rd Regiment, L. I.
41st Regiment, N. I.

254. Compared with 20 other stations of the Madras Presidency, whose average strength exceeds 500, Fort Saint George stands eleventh on the list as regards its admission rate, 552·7 per mille; eighth, as regards its daily average sick, 19·1 per mille, and last of all, as regards its death rate, which is 23·2.

Contrast with other stations.

This has been chiefly due, during the past year, to a large number of deaths from cholera.

Admissions.

255. An inspection of Tables VIII. and IX., Appendix, pages 198 and 199, shows the principal diseases which have made up the admission and death rates. Intermittent fever has been admitted at the rate of 123·8 per mille, which, compared with other stations, is not high; continued fever stands at 18 per mille. Bowel complaints are rather high, 58·9 per mille, and a larger number of admissions has taken place from cholera than at any other station in the army, viz., 26·2 per mille of strength.

Deaths.

256. As stated above, the deaths from the latter disease are high, amounting, to 28 or 14·8 per mille. Diarrhœa contributes four deaths, and intermittent fever two.

Zymotic diseases stand at the rate of 380 per mille, of which miasmatic diseases contribute 624 cases, and venereal diseases 48.

VELLORE.

Sickness and mortality.

257. The strength of this station made up by the native troops, as per margin, amounts to 1,052.

6th Regiment, N. I.
Native Details.

The number of admissions into hospital amounts to 512, and the daily average sick 21·7. The deaths in hospital stand at 7, and those out 6.

Contrast with other stations.

258. Compared with 20 other stations, Vellore stands seventh on the list as regards its admission rate (485·6 per mille); ninth as regards its daily sick (20·7), and third as regards its death rate in hospital (6·6): but with the deaths out of hospital the rate would be 12·3 per mille.

This station has always been considered healthy for natives.

Admissions.

259. The admissions from intermittent fever are low comparatively, while those from rheumatism are rather high.

Deaths.

260. There have been only six admissions and two deaths from cholera.

ST. THOMAS' MOUNT.

Sickness and mortality.

261. There has been only a small detachment of the 6th Regiment, Native Infantry, which, including details, has averaged 180 men.

The admissions have been 198, the daily sick 4·3, and the deaths 1.

Its rate of sickness, compared with other stations, can be seen from an inspection of Table VI., Appendix, page 196.

There have been no admissions from cholera.

PALAVERAM.

Sickness and mortality.

262. The mean strength of this depôt has been 176.

The admissions into hospital have been 270; the daily sick 35·1, and the deaths in hospital 8.

Being the depôt of the Native army, to which invalids from other stations are sent, it has a high death rate.

This station has the reputation as being a place where cholera has never been known to break out; one admission, however, occurred during the year 1866.

SOUTHERN DIVISION.

263. The following is a list of stations occupied by native troops composing this division:—

Trichinopoly.
Quilon.
Palamcottah.

Trivandrum.
Trichoor.

Sickness and mortality.

17th Regiment, N. I.
23rd Regiment, N. I.
25th Regiment, N. I.
39th Regiment, N. I.
Native Details.

264. The average strength of the troops serving in it made up by corps, as per margin, amounts to 2,677 men. The total admissions into hospital amount to 992; the daily average sick to 42·7, and the deaths to 27, of which three died out of hospital.

Five men were invalided during the year.

265. The

265. The following statement shows the rates of sickness and mortality in this division for the year 1866, as contrasted with former years. Sickness and mortality of previous years.

Admissions per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - - - -	677.4	504.1	431.1	440.5	503.3	405.8	500.8	370.5
Daily sick - - - - -	25.7	16.8	13.3	8.0	15.0	14.1	15.8	15.9
Deaths in hospital - - -	17.8	8.3	11.8	13.8	6.3	12.1	12.0	8.9
Admissions from choe ra - -	14.2	11.3	12.8	26.3	4.4	10.5	13.8	4.4
Deaths from cholera - - -	8.6	5.0	4.4	7.9	3.3	6.4	6.1	2.6
Average Strength - - -	3,799	3,350	3,122	3,532	2,686	2,644	3,188.8	2,677

There appears, from the above Table, to have been a great decrease of sickness and mortality amongst the Native troops serving in this division, as compared with the average of six previous years. The rate of admissions has decreased both on that of that last year and the average, while the average daily sick remains almost precisely the same. The mortality in hospital has also very much decreased.

The admissions and deaths from cholera are also far less than the average.

266. The admissions into hospital have been made up by cases of intermittent fever (153) at the rate of 57.1 per mille; rheumatism (118), 44 per mille; venereal diseases (81), 30.2 per mille; ophthalmia (67), 25 per mille; and parasitic diseases (64), 23.9 per mille. Admissions.

Two cases of guinea-worm were admitted. Abscess and ulcers contributed 167, or 62.3 per mille.

Compared with other divisions, the southern appears remarkably healthy.

The admissions from fever are fewer than in any other division.

The admissions from atrophica and anæmia only amount to 19 or 7 per mille, which is very low.

Venereal diseases are very high for Native troops.

There were only 12 admissions from cholera, and eight deaths, in this division during 1866.

267. In addition to the deaths from the latter disease which has caused the greater portion of the mortality, there were four deaths from diarrhoea, two from phthisis, and two from anæmia, and one each from dysentery, intermittent, remittent and continued fevers, and heart disease, and six from other causes. Deaths.

TRICHINOPOLY.

268. The average strength of the Native troops serving at this station during the year 1866, has been 1,277. The admissions into hospital have been 377; the daily sick 18.9, and the deaths in hospital 16. Two deaths occurred outside. Seven men were invalided. Sickness and mortality.

23rd Regiment, L. I. | 9th Regiment, N. I.
25th Regiment, N. I. | Native Details.

269. Compared with other stations of the army, Trichinopoly has been healthier than any other station in the Madras Presidency. It stands first on the list, as far as its rate of admission is concerned; and fourth, as regards its daily sick, these being 295.2 and 14.8 respectively. Contrast with other stations.

It stands thirteenth on the list as regards its death rate in hospital, this being 12.5.

The greatest proportion of admissions is made up of cases of rheumatism and ophthalmia (38.3 and 32.1 per mille); all other admissions are remarkably low as compared with other stations, especially cases of intermittent fever, of which only 33 or 25.8 per mille have been admitted. One case of remittent fever, and nine of continued have also been admitted.

Bowel complaints are also low.

This absence of miasmatic disease is interesting when considered in connection with the fact that the cantonment of Trichinopoly stands in the midst of wet cultivation of rice fields, which has been considered to exercise a prejudicial influence on the health of the community at other stations.

270. Eleven admissions have taken place from cholera, and it is almost entirely from this disease that the mortality has occurred. Admissions from cholera.

QUILON.

Sickness and
mortality.
17th Regiment, N. I.

271. The average strength of the corps at this station amounts to 432. The total number of admissions amounts to 176; the daily sick to 9·6, and the deaths to 4, one of which occurred out of hospital.

Twenty-seven men were invalided.

Contrast with
other stations.

272. Compared with six other stations whose average strength is under 500, Quilon stands first on the list as regards its admission and death rates; these elements being 407·4 and 6·9 per mille respectively.

It is second as regards its daily average sick, which is at the rate of 22 per mille.

Admissions.

273. The admissions from miasmatic disease at this station like the former are remarkably low. Only 27 cases of intermittent fever have been admitted, and there has been no cholera.

Deaths.

274. One death occurred in hospital from the former disease; one from ebrietas, and another from diabetes.

PALAMCOTTAH.

Sickness and
mortality.
39th Regiment, N. I.

275. The average strength of the corps at this station amounted during 1866 to 669. The admissions into hospital have been 289; the daily sick 6·48 and the deaths 5.

Contrast with
other stations.

276. Compared with other stations of its class it has been remarkably healthy. It stands fourth on the list as regards its admission rate, this being 432 per mille. Its rate of average daily sick has been lower than any other station in the Presidency, viz. 9·6 per mille, and it stands fourth on the list as regards its death rate, this being 7·4 per mille.

Like the other stations in the southern division, the admissions from miasmatic disease are comparatively few, but the ratio of those from intermittent fever is greater than at the stations just described, being 121·1 per mille.

Admissions.

277. The rate of admissions from rheumatic complaints is high.

Only one case of cholera occurred during the year, which proved fatal.

Deaths.

278. Of the remaining four deaths, one was a case of suicide, and the others were from atrophica, dysentery, and diarrhoea, each contributing one.

TRIVANDRUM.

Sickness and
mortality.

279. The native troops at this station have consisted during the past year of a detachment from the 17th Regiment at Quilon. Its average strength has been 73, out of which 32 admissions into hospital have taken place.

Its average daily sick has been ·95. No death has occurred.

TRICHOOR.

Sickness and
mortality.

280. This station like the former, has been garrisoned by a detachment of the 17th Regiment. Its average strength has been 177, out of which 92 have been admitted into hospital, and the average daily sick has been 2·98. No deaths have occurred. The rate of sickness of this and the former station will be observed by a reference to Table VI. in the Appendix, page 196.

MYSORE DIVISION.

281. The following is a list of stations garrisoned by native troops forming this division:—

Bangalore, Cannanore, Mangalore, Mercara, Mysore, Hurryhur, Wynaad.

282. The strength of the troops serving in this division at different periods of this year, made up by the corps and detachments as per margin, has been 6,111.

The total admissions into hospital have been 4,466; the average daily sick 164·3, and the deaths at head quarters 85, of which 72 were in hospital; five men were invalided.

283. The following statement shows the rate of sickness and mortality occurring in this division during the past year, as compared with previous periods.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - - -	709·2	593·9	624·7	624·7	756·1	729·0	656·9	730·8
Daily sick - - - -	31·7	22·3	31·1	8·9	19·0	29·1	21·4	26·8
Deaths in hospital - - -	11·6	9·9	7·9	5·7	11·3	10·8	9·6	11·7
Admissions from cholera - -	5·5	4·3	1·8	1·4	11·0	3·5	4·6	5·2
Deaths from cholera - - -	2·1	2·3	1·3	0·8	4·6	2·0	2·2	2·2
Average Strength - -	7,442	6,847	6,881	6,043	6,181	6,197	6,598·5	6,111

The strength of the native troops serving in this division during the year is slightly lower than any previous year since 1860. The sickness and mortality are in excess of the average, and slightly higher than 1865, due to the greater prevalence of cholera. The average daily sick is, however, lower than the preceding one.

284. The admissions into hospital have been chiefly made up by cases of intermittent fever (1948), which is at the rate of 318·7 per mille. Remittent fever (233) stands at 38·1 per mille, and continued fever (66) at 10·8 per mille. Rheumatism (215) has been admitted at the rate of 35·1 per mille, dysentery (102), and diarrhoea (165) at the rate of 16·6 and 27·0 per mille of strength.

Venereal diseases (118) have been admitted at the rate of 19·3 per mille.

Parasitic diseases (193) stand at 31·5 per mille. Only four cases of Guinea-worm have been under treatment.

There have been 32 admissions from cholera, of which 14 died.

285. In addition to these deaths, 10 cases of intermittent and seven cases of remittent fever were fatal. Dysentery and diarrhoea each contribute seven deaths. Atrophia and anæmia contribute five deaths out of 139 admissions from this order of disease. As is noticed in another portion of this Report, the prevalence of miasmatic disease shown in the divisional return has been chiefly in the new cantonment of Mysore.

BANGALORE.

286. The average strength of native troops at this station made up by the corps as per margin has amounted to 2,220.

The admissions into hospital have been 1,272; the daily sick 59·08 and the deaths at head quarters 36, of which 32 died in hospital.

287. Compared with other stations of the same class, the sickness and mortality amongst the native troops at Bangalore have been high.

It stands thirteenth on the list as regards its rate of admissions into hospital and twelfth in respect to average daily sick; the former amounts to 573·0 per mille, and the latter to 26·6 per mille. The mortality in hospital is comparatively high, being 14·4 per mille, and stands lowest but two on the list as regards this element.

288. The admissions have been made up of a considerable number of cases of intermittent fever (306), which stand at the rate of 137·8 per mille. The admissions from other special diseases are not high, excepting rheumatism and ophthalmia

Sickness and Mortality.

Native Troops
13th Regiment N. I.
14th Regiment N. I.
15th Regiment N. I.
20th Detachment.

Horse Artillery.
21st Regiment N. I.
30th Regiment N. I.
40th Regiment N. I.

Sappers and Miners.—Oosoor Remount Depot.

33rd Regiment N. I.
5th Regiment N. I.

27th Regiment N. I.
Sickness and mortality of previous years.

Admissions.

Deaths.

Sickness and mortality.

Head Quarters Sappers and Miners.
22nd Regiment N. I.
33rd Regiment N. I.
F. B. N. Ryl. Artillery.

5th Regiment N. I.
27th Regiment N. I.
Left Wing.

Contrast with previous years.

Admissions.

ophthalmia, which have been admitted at the rate of 40·9 and 35·1 per mille, respectively.

The admissions from cholera amount to 24, and the deaths from this disease to 12.

Deaths.

289. Seven deaths occurred from fever, four of which were of the intermittent type, and three remittent.

Small-pox, phthisis, and hepatic disease each furnished one death.

CANNANORE.

Sickness and mortality.

13th Regiment N. I.
10th Regiment N. I.

290. The strength of the native troops serving at this station amounts to 1,315, out of which 415 admissions into hospital have taken place.

The average daily sick has been 17·93, and the deaths at head quarters amount to 14, of which 10 occurred in hospital.

Contrast with other stations.

291. Cannanore stands very high on the list of stations as regards its comparative salubrity.

It is second as regards its admission and daily sick rates, these being 315·6 and 13·6 per mille of average strength; and fifth on the list as regards its hospital death rate, which is 7·6 per mille.

Admissions.

292. The admissions from diseases of the miasmatic class are very low, only 76 cases of fever having been admitted, at the rate of 57·7 per mille. Bowel complaints are infrequent.

No case of cholera has occurred.

Deaths.

293. Of the deaths, two occurred from rheumatism, two from respiratory diseases, and one from hepatic disease and intermittent fever.

This station, as well as others on the western coast, is remarkable for its general freedom from cholera epidemics.

MANGALORE.

Sickness and mortality.

14th Regiment N. I.
3 Battery N. A.

294. The strength of the native troops at this station amounts to 798. The admissions into hospital have amounted to 350; the daily average sick 11·2, and deaths 16, of which 10 occurred in hospital.

Contrast with other stations.

295. Comparatively speaking, Mangalore has been a healthy station during the past year. The admission rate has been 438·6 per mille, and its daily sick rate 14 per mille, thus placing it sixth on the list as regards the former element, and third as regards the latter.

The death rate has been high, viz., 12·5 in hospital and 7·5 out of hospital, placing it fourteenth on the list of 20 other stations of its class.

Admissions.

296. The remarks made concerning the former station equally apply to this, excepting that the proportion of admissions from rheumatism and diarrhoea is high, 40 and 38 admissions respectively having taken place from these two diseases, which are at the rate of 50 and 47 per mille of strength.

No cholera has occurred.

Deaths.

297. Four deaths have taken place from dysentery, and one from diarrhoea and phthisis.

MERCARA.

Sickness and mortality.

15th Regiment N. I.

298. This place is situated in the Coorg country, and is a hill station, 4,500 feet above the level of the sea. It has been garrisoned by the corps as per margin, and its average strength has been, throughout the year, 739. The admissions into hospital have been 438 and the daily sick 13·9. The deaths have been 12, of which three occurred out of hospital.

Contrast with other stations.

299. As might be expected from its topographical position, Mercara does not occupy a very high place, amongst the other stations garrisoned by native troops, for its comparative salubrity. Its rate of admissions into hospital stands at 592·7 per mille, its daily average sick 18·8 per mille, and its death rate in hospital 12·1 per mille. It stands fifteenth, seventh, and twelfth on the list as regards these elements during the past year.

Admissions.

300. The admissions are characterised by a large proportion of cases of intermittent fever and bowel complaints.

No

No admissions have occurred from cholera.

301. The deaths have been from intermittent fever four, dysentery one, Deaths.
diarrhœa three, and respiratory disease one.

MYSORE.

302. This cantonment was first occupied by a native regiment (26th Regiment Native Infantry) at the end of the year 1863, which was transferred from the French Rocks for political reasons, the latter station being given up. Soon after its occupation the regiment began to suffer from malarious fever of a very severe type, and the average daily sick rose from 8.5 at the French Rocks in 1863 to 27.5 in 1864 at Mysore. The sickness continued to prevail to such an extent in the regiment that it was decided in May 1865 to send the 6th Regiment Native Infantry to Vellore, and to replace it with the 21st Regiment, which garrisoned the station for a few weeks at the end of 1866. Prevalence of malarious disease.

The same type of sickness continued to prevail in the 21st Regiment Native Infantry.

In consequence of the alarming increase of sickness at Mysore, the Government approved of its being abandoned, and the 21st was removed to the French Rocks in November 1866, after which an immediate improvement began to take place in the health of the men.

303. The average strength of the regiment for 47 weeks is 699, during which time there were 1,041 admissions in hospital. The average daily sick was 2.31, and the deaths in hospital five. Sickness and mortality.

On account of the returns not being complete for the whole year, it is not possible to draw comparisons between it and the other stations.

The rate of admissions has been 1,489.2 per mille; the daily sick 47.4 per mille, and the deaths 7.1 per mille.

With the exception of Kurnool and Sumbulpore, these are higher rates of sickness than any other stations in the Madras Presidency.

It is to be observed that the sickness at Mysore was not of a fatal character.

The stations alluded to above, and which receive notice in this report, suffered more extensively from fevers, with a far higher rate of mortality.

304. The admissions at Mysore, as stated above, have consisted chiefly of admissions from fever of the intermittent type. Admissions.

The number of admissions from this disease has been 660, or 944.2 per mille of strength. Remittent fever prevailed to the extent of 189 cases, or 270.3 per mille, and seven cases of continued fever were admitted, which yields a rate of 10 per mille. The admissions from all other diseases are very low.

One admission occurred from cholera.

305. Of the five deaths which occurred, intermittent and remittent fevers, dysentery, diarrhœa, and phthisis each contribute one. Deaths.

HURRYHUR.

306. This station has only been occupied by detachments as per margin during the year, in consequence of the villages on the road from Bangalore to this place suffering from cholera and scarcity of water, which prevented the 5th Regiment proceeding to its destination. Sickness and mortality.

Its average strength has been 231, out of which number 133 were admitted into hospital; the average daily sick was 4.85, and the deaths in hospital three. Detachment 20th Regiment N. I.
Detachment 5th Regiment N. I.

Its place amongst other stations of its class is comparatively good, although its death rate is highest.

It is to be noticed that there were two admissions into hospital from drunkenness.

WYNAAD.

307. This station has been garrisoned by a detachment of the Sappers and Miners from Bangalore. Sickness and mortality.

Its average strength has been 168, out of which 241 admissions into hospital have taken place.

The average daily sick has been 9.5, and one death in hospital has occurred.

These returns extend over 27 weeks only ; it may be therefore judged how unhealthy a station it has been. Situated in the midst of the jungles, the men engaged temporarily on public works have suffered very much from fever of the intermittent type.

The admissions from this disease amount to 106 or 630·9 per mille. One death occurred from dysentery.

CEDED DISTRICTS.

308. The following are the stations of native troops composing this division :—

Bellary. | Cuddapah. | Kurnool.

The average strength of troops serving in this division, made up by the corps as per margin, has been 2,773.

1st Regiment L. C.
8th Regiment N. I.
20th Regiment N. I.
27th Regiment N. I.

28th Regiment N. I.
Native Details.
34th Regiment N. I.

The total admissions into hospital have been 2,936 ; the daily average sick 108·2, and the deaths in hospital, 38.

Sickness and
mortality of pre-
vious periods.

309. The following statement shows the sickness and mortality in this division, as contrasted with former periods.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - - -	664·1	535·6	477·4	601·0	646·1	687·0	599·5	1058·7
Daily sick - - - -	30·7	21·5	16·1	18·8	24·1	26·4	22·9	39·0
Deaths in hospital - - -	8·9	4·0	7·4	6·3	11·5	6·5	7·4	13·7
Admissions from cholera - -	1·3	1·3	5·6	1·0	6·1	2·7	3·0	9·0
Deaths from cholera - - -	·6	·4	3·1	1·0	2·8	1·7	1·6	3·2
Average Strength - -	3,013	2,946	3,213	2,820	2,764	2,895	2,941·8	2,773

From the above figures it is to be observed that there has been a very large increase in sickness and mortality amongst the native troops serving in the ceded districts. The average strength has been slightly below that of the previous year, 1865, and much lower than the average.

The admission rate is nearly double that of the average, and 371·7 per mille above that of the previous year.

The daily sick rate is very much higher than usual, and the rate of mortality in hospital is also nearly double that of the average.

The admissions and deaths from cholera are also much above the average.

The cause of the great increase of sickness is attributable to certain malarious influences which have prevailed throughout certain parts of the Presidency, causing an almost unprecedented amount of fever, which showed itself most severely at Kurnool. In addition to this, the Bellary District suffered very much from a scarcity of all the necessaries of life, in consequence of the deficiency in the rain-fall during the past year.

Next to the northern division, there was more privation and distress amongst the natives of Bellary and Kurnool than in any other district in the Presidency.

Admissions.

310. More than one-half the admissions into hospital in this division has been from intermittent fever, which from this disease alone have amounted to 1,570 cases or 566·1 per mille. This is noticed more particularly under the stations in which the disease has prevailed more extensively.

The other admissions have been chiefly made up by cases of rheumatism (162), which have been admitted at the rate of 58·2 per mille, diarrhoea (132), 47·6 per mille, and dysentery (119), 24·8 per mille.

The admissions from venereal diseases have been high in this division, these being 98, or 35·3 per mille.

There have been 26 cases of Guinea-worm under treatment.

Twenty-five cases of cholera have been admitted, of which nine were fatal.

Atrophica gives 52 admissions.

311. In addition to the deaths from cholera, there were nine deaths from fevers, four from diarrhoea, and two from dysentery. Deaths.

Dropsy contributes three deaths; respiratory diseases, phthisis, and rheumatism each two; atrophica, heart disease, and hepatitis each show one death.

BELLARY.

312. The average strength of the native troops at this station, made up by the corps as per margin, has been 1,479. The total admissions into hospital have been 1,086; the average daily sick, 48·4, and the deaths in hospital, 20. Sickness and mortality.

1st Regiment L. C.	34th Regiment N. I. Native Details.
*8th Regiment N. I.	
20th Regiment N. I.	

* During part of the 1st quarter only.

313. Bellary stands low, comparatively, amongst other stations of the Presidency, as regards its salubrity, which might be expected from what has been written above. Contrasted with other stations.

Its rate of admissions into hospital has been 734·2 per mille, placing it sixteenth on the list of 20 other stations. Its daily average sick has been 32·7 per mille, and its death rate in hospital 13·5 per mille. It stands seventeenth on the list as regards the former element, and sixteenth as regards the latter.

314. The admissions into hospital are chiefly caused by intermittent fever, of which 251 cases, or 169·6 per mille, were admitted. Thirty-three cases of continued fever were also treated in hospital. Admissions.

The admissions from dysentery and diarrhoea are also high, 78 and 79 cases being recorded. An increase in these diseases was noticed as having occurred amongst Europeans at this station.

Rheumatic cases are also high.

Ten cases of cholera were admitted into hospital, of which half have died.

315. Four deaths occurred from fever, three from diarrhoea, and one from rheumatism, and another from dysentery. Deaths.

CUDDAPAH.

316. The average strength of the native troops stationed during the year 1866 has been 785. Sickness and mortality.

The total admissions into hospital have been 334; the daily average sick 20·2, and the deaths 9. 27th Regiment N. I.
28th Regiment N. I.
14th Regiment N. I.

This station has not suffered from sickness to the same extent as others in this division.

317. It stands third on the list as regards its rate of admissions into hospital, which is 425·5 per mille, but is low down as regards its daily average sick and death rate, being eleventh on the list as regards these elements, which are 25·7 and 11·4 per mille, respectively. Contrast with other stations.

318. The admissions from intermittent fever are 145 or 184·7 per mille, which are high, comparatively, but other diseases have been low, excepting ophthalmia, from which 28 cases were admitted. Admissions.

Twelve cases of cholera were admitted, of which two died.

319. In addition to the above deaths there was one each from continued fever, dysentery, diarrhoea, rheumatism, phthisis, respiratory disease and hepatitis. Deaths.

KURNOOL.

320. The regiments as per margin have been stationed at Kurnool during the year 1866. Its average strength has been 645, out of which 1,487 admissions into hospital have taken place; in other words, every unit composing the regiment would appear to have been admitted more than twice over. The average daily sick has been 35·01, and the deaths 9. Sickness and mortality.

28th Regiment N. I.
13th Regiment N. I.
36th Regiment N. I.
12th Regiment N. I.

321. Compared with the other stations of the Madras Presidency, Kurnool may be stated to have been the unhealthiest of them all, excepting only Sumbulpore in the northern division. Contrast with other stations.

It has a sickness and mortality* rate higher than any other station of its class; the admission rate having been 2,305 per mille, daily sick 54·2 per mille, and the mortality 13·9 per mille.

Admissions.

322. The admissions which have principally made up this very large amount of sickness have been cases of intermittent fever, 1,166 which were under treatment during the year, or at the rate of 1807·7 per mille of strength. Rheumatic cases have also been very high, viz., 108·5 per mille; diarrhœa cases are 77·5 per mille, and dysentery 29·4, both of which are comparatively high.

It will be seen, therefore, that diseases of a malarious type have been most unusually high at this station.

The mortality, although higher than at other stations, has not been in proportion to the increased rate of sickness.

Of the nine deaths, two have been from intermittent and one from remittent fever, one from dysentery, two from tubercular, and one from respiratory disease.

Frequent outbreaks of cholera; removal of station proposed.

323. There were six admissions from cholera, and two deaths in the regiment stationed here.

There is a peculiarity attaching to the appearance of cholera at Kurnool, in the extraordinary fatality of the disease when it attacks European residents. This has been so remarkable for the last few years, that in 1866 it was proposed to remove the station to some other portion of the Kurnool District, and the sanitary commissioner was specially deputed to report upon the necessity of this change.

After an inspection of the station at the end of 1866, and personal communication with the local authorities, it was found that Kurnool, as compared with other stations, had not been for a series of years so unhealthy as to justify so extreme a measure as the entire removal of the military and civil station.

It was also ascertained that of the cases among Europeans, a considerable proportion had not originated in the station itself, but had been introduced from other parts of the district.

The following is an extract from my report, dated 12th December 1866 :--

"If we look at the actual mortality from all causes during the same period, Kurnool stands thirteenth out of a list of 32 stations, its death rate being 10·5 per mille. The lowest mortality in these returns being Quilon, 6·8, and the highest Henzadah, 29·2. The deaths from cholera alone amounted to 2·5 per mille in Kurnool, being a lower rate from this disease than at eleven other military stations.

"6. The regiment now stationed at Kurnool, 28th Madras Native Infantry, has suffered severely from fever this year, but as a set-off against this it may be mentioned that last year Kurnool was the healthiest military station for Native troops in the Madras Presidency, not a single death having occurred among the sepoys from any cause. These two opposite facts show how unsafe it is to draw conclusions regarding sanitary conditions from short periods of observation.

"7. From what I have above stated, I cannot recommend the removal of the military station from Kurnool, on the ground that the sanitary condition of the troops has been such as to show that the place is unsuited for continued occupation. The mortality from cholera among Europeans at Kurnool, noticed by Dr. Kees, and which during the present year has excited so much regret, is undoubtedly large in proportion to the small number of these residents; but in testing the occurrence of these cases, distinction must be made between cholera contracted at Kurnool itself, and that which may reasonably be supposed to have been brought into the station.

"8. In the present year, 1866, there were five deaths among Europeans, and four cases in which the patients recovered. Of these five deaths, one was Captain

* Fort Saint George is higher as regards its death rate, but this station has a large number of Native details from other stations.

Captain Marsh, an isolated case of cholera, but Captain Marsh had just returned from a portion of the district where cholera was raging. Of the four remaining cases, Major Flint arrived at Kurnool from Pennikonda in the Bellary District, where cholera was epidemic, and he had, before reaching Kurnool been seized with symptoms of the disease. Dr. Ransom, who died of cholera, had been unusually exposed to dangerous influences, for, in addition to treating cholera patients, he had imprudently been examining in detail all the filthiest latrines of the town, with a view to the improvement of the sanitary condition of the town. Another case which ended fatally was that of Mr. Lowry, of the Telegraph Department, who had just returned from a tour of duty in an unhealthy part of the country, and who may not improbably be supposed to have contracted the disease away from Kurnool. I do not attach much importance to these details, except as explaining the extraordinary discrepancy which might otherwise appear between the health of the Native soldiers and the European population. The attacks among the Europeans were not confined to any particular portion of the station, but were pretty equally divided among all the residents. It must also be remembered that all parts of the district of Kurnool were either then (May and June), or later in the year, severely visited by cholera.

"9. While I believe that no sufficient case has been made out on the score of decided unhealthiness for abandoning Kurnool, it is of importance that I should mention that the officer commanding the ceded districts, with whom I have personally communicated, is of opinion that there are serious advantages in retaining Kurnool as a military station, for reasons which probably led to its original selection. At Kurnool the regiment is immediately on the Hyderabad frontier, and serves to protect the Native town of Kurnool from attack; moreover, the presence of an armed force may, in disturbed times, be useful in coercing a large Mahomedan population who have been only about 27 years under British Government."

The Government decided that the project of removing the station should be abandoned.

A severe epidemic of fever made its first appearance about the month of September, not only in the town of Kurnool but throughout the district. It is described by the local authorities* as not having been of a dangerous type (as the small mortality shows), but the men were much debilitated from it, some of them having had repeated attacks. It was severest in October and November, when the number under treatment was large, as shown in the margin, while latterly it was not higher than 78.

The causes of this outbreak are obscure, but must to a certain extent be attributable to the abnormal atmospheric influences which have been observed to prevail throughout all our military stations during 1866, and which would seem to predispose to miasmatic disease, more especially in those districts distressed by the scarcity of grain, &c.

				Men.
23rd October 1866	-	-	-	171
26th October 1866	-	-	-	201
5th November	-	-	-	145
End of November	-	-	-	33

NORTHERN DIVISION.

324. The following is a list of stations situated in the Northern Division, from which medical returns of Native troops have been received :—

Waltair.	Cuttack.
Berhampore.	Sumbulpor.
Samulcottah.	Ellore.
Vizianagram.	

325. The average strength of the Native troops, made up of corps as per margin, has been 3,819. The total admissions into hospital have been 3,145, the daily average sick has been 112.2, and the total deaths 67, of which 63 died in hospital.

	Sickness and mortality.
11th Regiment N. I.	31st Regiment N. I.
19th Regiment N. I.	37th Regiment N. I.
24th Regiment N. I.	$\frac{1}{2}$ Battalion N. A.

326. The

* Vide letter from the Officer Commanding Ceded Districts, No. 31, dated 3 March, Proceedings of Government, Military Department, No. 1,547, dated 29 April 1867.

Contrast with previous years

326. The following statement shows the sickness and mortality in this division as compared with previous years :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - - -	1019·1	586·4	604·2	770·2	663·1	622·0	721·6	823·2
Daily sick - - - -	40·7	25·2	23·1	27·5	23·6	22·2	27·7	29·3
Deaths in hospital - -	12·7	10·0	7·5	7·9	17·1	8·1	10·7	16·4
Admissions from cholera - -	4·6	9·6	1·2	2·3	18·8	2·9	6·7	15·7
Deaths from cholera - -	2·0	2·9	·4	·7	6·2	1·0	2·2	6·0
Average Strength - - -	6,281	6,742	4,756	5,150	4,670	3,789	5,231·3	3,819

It will be observed that there has been an increase in the admission and daily sick rates, not only on that of last year, but on the average also.

The death rate has also very much increased, being just double what it was in 1865; this is due probably to the prevalence of cholera in this division, the admissions from which, it will be observed, are at the rate of 157 per mille.

The year 1866 appears to have been more sickly than since 1860, in which, it will be observed, a far greater rate of admissions and daily sick took place.

Admissions.

327. The disease which has made up the chief proportion of admissions into hospital has been intermittent fever, of which the station of Sumbulpore, as hereafter to be noticed, contributes a large share.

These admissions amount to 1,569, or 410·8 per mille of strength.

Rheumatic disease has been admitted in the ratio of 75·9 per mille, there having been 290 cases of this disease under treatment. No other division has so large a proportion.

Fifty-two cases of anæmia have been admitted, of which seven died.

Cholera has prevailed to the extent of 60 cases, 1·57 per mille, of which 23 cases were fatal. Next to the centre division this disease has been more prevalent than in any other.

No cases of Guinea-worm have been under treatment.

Deaths.

328. In addition to the deaths above noticed, there have been six from rheumatism, five from intermittent fever, five from respiratory diseases, three each from dysentery, dropsy and heart disease, and one from small-pox, diarrhœa, and hepatitis, besides nine from other causes.

WALTAIR (VIZAGAPATAM).

Sickness and mortality.

* 31st Regiment N. I.

329. The average strength of the Native regiment* at this station has been 841. The admissions have been 480; the daily sick 23·7, and the deaths in hospital 11.

Contrast with other stations.

330. This station stands twelfth on the list as regards its ratio of admissions, which is 570·7 per mille, thirteenth as regards its daily sick, and fifteenth as regards its death rate; these latter elements being 28·2 and 13·0 per mille, respectively.

Admissions.

331. The admissions from intermittent fever are low, being only 79, or 93·9 per mille.

The admissions from bowel complaints, especially dysentery, are comparatively high. A very large proportion of cases of ophthalmia appears to have been under treatment; 51 cases of this disease have been admitted, or 60·6 per mille.

The admissions from rheumatism are also high.

The proportion of admissions from this and the former disease is higher than any other in the Presidency, excepting Berhampore.

Deaths.

332. The admissions from cholera are 14, of which five deaths occurred; three other deaths occurred from bowel complaints.

BERHAMPORE.

333. The strength of the regiment* quartered at this station during the year has been 755. There have been 382 admissions into hospital, and the average daily sick has been 23·8. Sickness and mortality.
* 11th Regiment N. I.

The deaths have been 12 in hospital.

334. Compared with 20 other stations, it stands ninth on the list as regards its admission rate (505·9 per mille); sixteenth as to its daily sick (31·6), and last of all, except Fort St. George, as regards its death rate, which is 15·8 per mille. Contrast with other stations.

335. The admissions are made up by a very large number of rheumatic cases, (102), which have been treated at the rate of 135 per mille. Intermittent fever stands at 116·5 per mille. Admissions.

Cholera shows 16 admissions, of which four were fatal.

336. Four cases of rheumatism are recorded amongst the deaths. This and the former disease may be considered as the chief causes of mortality at this station during the year under review. Deaths.

SAMULCOTTAH.

337. The average strength of the Native corps† stationed at this place during 1866 has been 725. The total admissions have been 427, the average daily sick 11·15, and the deaths in hospital 10. Sickness and mortality.
† 19th Regiment N. I.

338. Compared with other stations, Samulcottah stands fourteenth on the list, its admission rate being 558·9. Its daily sick rate is 15·3, or fifth on the list. Contrast with other stations.

Its death rate is comparatively high, being 13·7, which place sit seventeenth on the list.

339. The admissions are chiefly intermittent fever, the other diseases being comparatively low. Admissions.

Four admissions and one death occurred from cholera.

340. Two deaths occurred from fever. Deaths.

VIZIANAGRAM.

341. The average strength of the Native corps‡ located here during the year amounts to 703. The admissions have been 308, and the daily sick 12·4. Sickness and mortality.
‡ 24th Regiment N. I.

The deaths in hospital have been seven, and those outside three.

342. This station has been healthy during the year. Its admission rate is 438·1 per mille, its daily sick 17·7, and deaths in hospital 9·9. It stands fifth on the list as regards the first element, sixth as regards the second, and ninth as regards the last. Contrast with other stations.

343. There have been two admissions from cholera, of which one died; the other admissions are not high. Deaths.

Of the other deaths one has been from intermittent fever, one from pneumonia, one from hæmoptysis, one from dropsy, and another from paralysis.

CUTTACK.

344. The strength of the Native regiment§ stationed here during the year has been 453, of which 450 men have been admitted into hospital; the daily sick has been 11·2, and the deaths four. Sickness and mortality.
§ 37th Regiment N. I.

Its admission rate is high, viz., 993·4 per mille, the daily sick rate is 24·7 per mille, and its death rate, 8·8, is low.

Its admissions from intermittent fever and rheumatism are comparatively high.

The deaths, as given in the station returns are four, one of which is a case of intermittent fever, and the others are from respiratory disease.

SUMBULPORE.

Sickness and
mortality.

* Right Wing, 37th
Regiment N. I.

345. The average strength of the Native regiment* at this station has been 336, out of which number there have been 1,123 admissions into hospital; the daily sick has been 29·96, and the deaths 20, of which 19 died in hospital.

No other station in the Madras Presidency has shown such a high rate of mortality.

Its admission rate is 3342·0 per mille; its daily sick 89·1 per mille, and its death rate 56·5 in hospital and 2·9 outside.

There have been 981 admissions from intermittent fever, or 2919·6 per mille of strength. The admissions from other miasmatic diseases are very high.

Prevalence of
miasmatic disease.

346. The admissions from cholera have been 19, or 56·5 per mille; 12 of these cases were fatal. Such an enormous proportion of miasmatic disease, together with such a large amount of mortality, proves the existence of some local exciting cause.

The following extract from a special report on the sanitation of the troops is sufficient to account for much of the above high rate of sickness.

“A tolerably correct idea of the situation of these lines may be obtained from the brief statement that the broad bed of the Mahanuddee winds within a few hundred yards round more than one side of them; that there is a swampy patch of ground of some extent on another; that there is an offensive nullah on a third; and that on the fourth there is a dip or hollow in the ground that stretches between the lines and the small hills situated at a distance of about three-quarters of a mile, so that when the river is full the ground on which the lines stand becomes an island, with only a few yards unsubmerged between the margin of the water and the walls of the huts. The lines remain isolated a longer or shorter time according to the severity of the monsoon, and the ground more or less saturated with moisture; after a given time the water gradually subsides, leaving pools and swamps around the lines.”

As steps are being taken by Government to rectify the above evils by the removal of the lines to a fresh site, it is to be hoped that next year's stational report will show a better sanitary state of the troops stationed at this place.

HYDERABAD SUBSIDIARY FORCE.

Sickness and
mortality.

†2nd Regiment L. C.
4th Regiment N. I.
32nd Regiment N. I.
29th Regiment N. I.

38th Regiment N. I.
Sappers and Miners.
Native Details.

347. The average strength of the Native troops† serving in the Hyderabad territories has been 2,761. The total number of admissions registered during the year has been 2,718; the daily average sick amounted to 124·1, while the deaths at head quarters have been 32. Of this number 29 occurred in hospital.

348. The following statement shows the rates of sickness and mortality in this force for 1866, as compared with previous years.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	‡ Average of Six Years.	1866.
Admissions - - - -	985·7	726·2	1109·3	1195·2	840·9	610·1	953·1	984·4
Daily sick - - - -	39·0	26·0	31·0	31·2	26·8	27·4	31·2	44·9
Deaths in hospital - -	10·1	8·8	12·0	4·8	7·3	17·2	10·1	10·5
Admissions from cholera - -	9·9	·5	10·2	-	6·4	16·8	7·3	3·6
Deaths from cholera - -	2·7	·2	4·8	-	1·2	9·3	2·9	2·5
Average strength - - -	5,035	3,924	3,895	2,863	2,326	2,665	3,451	2,761

During the year 1866 it will be observed there has been a large increase in the rate of sickness in this division of the army over that of 1865. The ratio of admissions is 374 per mille in excess, and the daily average sick 17·5 per mille greater. The years 1862 and 1863 were sickly periods, which have brought the six-year average nearly up to that of 1866; but it is to be seen that at no former period since 1860 has there been such a large proportion of daily sick in hospital.

The

The death rate is about the average of six years, but it is nearly seven per mille lower than in 1865. The excess in mortality for the latter period was caused by a large number of cases of cholera.

The past year has been comparatively free from this disease.

As stated in the European portion of this report, the force to which the above divisional returns relate is all cantoned at Secunderabad and Trimulgherry, but as these contain the sickness of troops marching through the Nizam's territories, the stational returns from Secunderabad are alone taken for showing the diseases which have contributed towards making up the above.

No Native troops are stationed in the new cantonments of Trimulgherry.

SECUNDERABAD.

349. The mean strength of the Native troops* stationed at this the largest of our military stations has been 2,619. The total admissions into hospital have been 2,576, the average daily sick 114·7, and the deaths 28, of which 25 died in hospital.

Sickness and mortality.

*2nd Regiment L. C.	38th Regiment N. Sappers and Miners. Native Details.
4th Regiment N. I.	
22nd Regiment N. I.	

From the Divisional Returns, it has been already observed that there has been an increase in sickness at this station as compared with former years, but that the types of the diseases have not been of a fatal character.

350. The position which this large station takes, when compared with other stations of the Madras Presidency as to its comparative salubrity, is a very low one.

Contrast with other stations.

The admissions stand at the rate of 983·5 per mille, which places it last but three, out of 20 other stations whose average strength exceeds 500.

It is last on the list but two as to its rate of daily sick, which is 43·7 per mille.

Its mortality rate in hospital is 9·5 per mille, being eighth on the list amongst other stations as to this element.

351. The admissions into hospital have been made up by 2,216 cases of zymotic diseases, nine constitutional, 216 local, eight developmental, and 127 violence.

Admissions.

Of the first, 2,118 admissions and 15 deaths are of miasmatic diseases, which have been the chief causes of the increased sickness at this station.

Only 39 of the zymotic class are cases of venereal disease.

With the exception of those stations which have already been remarked upon (Mysore, Kurnool, and Sumbulpore) as suffering from remarkable epidemics, Secunderabad has suffered more than any other station† in the Peninsula of India, from a high proportion of admissions from intermittent fever.

The number of cases under treatment amounted to 1,682, or 642·7 per mille.

It is not easy to assign any direct cause for this unhealthiness, but as at Nagpore and Kamptee, the Native troops are here exposed to extreme variations of temperature which affect their health unfavourably.

Only six and seven cases respectively of remittent and continued fevers have been admitted.

A large proportion of cases of diarrhoea, 101, has been admitted, viz., at the rate of 38·5 per mille, which is comparatively high.

There have been 104 admissions from ophthalmia, or 39·7 per mille, which is a very high rate.

Fortunately, only 10 cases of cholera have occurred, of which six were fatal.

352. One case of typhoid fever is recorded. Of the other deaths, five have occurred from intermittent fever, one from continued fever, two from dysentery, one from diarrhoea, one from tubercular disease, and three from respiratory diseases.

Deaths.

† Kamptee has a proportion of 639·1 per mille.

NAGPORE FORCE.

353. The following is a list of stations garrisoned by Native troops in this division of the army.

Kamptee.	Chandah.
Raipore.	Seroncha.
Seetabuldee.	Moottoor.
Hoosingabad.	Chindwarrah.

Sickness and mortality.

31st Regiment L. C.
1st Regiment N. I.
7th Regiment N. I.
12th Regiment N. I.

36th Regiment N. I.
Sappers and Miners.
Native Details.
Troops Marching.

354. The average strength of Native troops serving in this division, as per margin, has been 3,081. The total admissions have been 3,726; the daily sick 111.9, and the deaths at head quarters 30, of which 29 were in hospital.

Sickness and mortality of previous years.

355. The following statement shows the rates of sickness and mortality amongst the Native troops in this division for the past year, as compared with previous periods:—

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	910.6	622.1	1131.6	1045.3	1207.5	1353.1	1029.3	1209.3
Daily sick - - -	43.1	19.8	30.0	31.7	37.3	43.2	34.7	36.3
Deaths - - -	21.0	4.5	11.1	21.2	14.7	18.7	15.6	9.4
Admissions from cholera	30.8	0.6	15.9	30.3	21.5	17.8	20.1	1.9
Deaths from cholera -	11.6	-	4.3	12.5	7.0	8.4	7.6	0.9
Average Strength -	4,277	3,329	2,506	3,195	3,113	3,089	3251.5	3,081

In this division it will be observed that, contrary to what has been noticed generally in others during the year 1866, the sickness and mortality have very much decreased on those of the year 1865, although as regards sickness there is a slight increase on the average of six years.

The greater rate of sickness in 1865 appears to have been due, amongst other causes, to the great prevalence of cholera.

Admissions.

356. The healthiest year was 1861, when out of an average strength of 3,329, the admission and death rates were 622 and 4.5 per mille respectively.

Like other parts of the Presidency, the Nagpore Division has suffered very severely from a large number of admissions from fever of a malarious origin, the proportion being the highest.

1,966 cases of intermittent fever, 15 cases of remittent, and 432 cases of continued fever have been admitted, the total of these being at the rate of 783.1 per mille.

Of the other admissions, rheumatism, ophthalmia, and dysentery are high.

There have only been six admissions from cholera, half of which died.

Deaths.

357. Of the deaths, the greatest number has been contributed by fever, to which disease is also due the highest number of admissions into hospital.

KAMPTEE.

Sickness and mortality.

3rd Regiment L. C.
12th Regiment N. I.
36th Regiment N. I.
Native Details.

358. The mean strength of this station, garrisoned by the troops as per margin, has been 1,441. The total number of admissions into hospital during the year 1866 amounted to 1,429; the daily average sick has been 42.6, while the deaths which occurred during the year under notice numbered 14, of which one man died out of hospital.

Contrast with other stations.

359. As might be expected from what has been said above, this station is very low down amongst those of its class, being last but two as to its comparative admission rate, which stands as high as 991.7 per mille.

Its average daily sick is also high, viz., 29.5 per mille.

Its death-rate is not high, considering the large amount of sickness, being only nine per mille in hospital. It stands sixth on the list.

360. The

360. The admissions from intermittent fever are 921, or 639 per mille, nearly of the same rate as at Secunderabad. The type of the disease has, however, been more fatal at this station, as the deaths are at the rate of 4·1 per mille, while at Secunderabad they were only 1·9. Admissions.

It has been remarked elsewhere how much the European troops have suffered during the year 1866 from malarious disease at this station.

The admissions from continued fever have been higher at this station than at any other, namely, 33 per mille.

Other diseases do not exhibit a very high rate.

361. The deaths have been chiefly from fever. Deaths.

RAIPORE.

362. The mean average strength of this station has been 712. The total number of admissions which took place during the year 1866 has been 788; its average daily sick amounted to 23·9, and the deaths which occurred in hospital were only two. Sickness and mortality.
7th Regiment Native Infantry.

By a reference to Table VI., Appendix, page 196, it will be noticed that its admission and daily sick rates, stand respectively at 1006·7 and 33·5 per mille, which are both comparatively remarkably high.

Its death rate is, however, singularly low, being only 2·8 per mille.

The station has been free from cholera.

363. The admissions are chiefly made up of fevers, 271 of the continued, and 240 of the intermittent type having been admitted. Admissions.

364. The two deaths are cases of epilepsy and anasarca. Deaths.

SEETABULDEE.

365. This station, situated about 10 miles from Kamptee, has been garrisoned by the detachments as per margin. Their average strength has been 425. Sickness and mortality.
Native Details.

Of this number there have been 736 admissions into hospital. The daily sick has been 14·15, and the deaths in hospital three.

Its admission rate has been very high, viz., 1755·3 per mille, as also its daily sick rate, which has been 33·2 per mille. Its death rate is only 7·0 per mille.

The sickness has been chiefly made up, as at other stations in this division, of continued and intermittent fevers; the admissions from the latter having been as high as 908 per mille.

The deaths were from cholera, diarrhoea, and dropsy.

HOOSINGABAD.

366. The average strength of the corps at this station during the year 1866 has been 385. Sickness and mortality.

The total admissions into hospital have been 435; the daily sick 20·8, and the deaths in hospital three.

Like the former stations it has suffered severely from miasmatic sickness, but its death rate has been low.

The station has been free from cholera.

CHANDAH.

367. The strength of the Native troops at this station during the year has only been 166, being a detachment of the 1st regiment from Hoosingabad. Sickness and mortality.

The admissions have been 272, the daily sick 8·84, and one death.

Its admissions from fever have been large. From cases of ophthalmia, the admissions have been numerous.

SERONCHA.

368. This station has been garrisoned by a detachment whose average strength has been 163, of which 193 cases have been admitted into hospital; the daily sick has been 8·1. One death occurred out of hospital, at head quarters.

MOOTTOOR.

Sickness and mortality. 369. The medical returns for this station only extend over twenty-three weeks. During this period it was occupied by a company of Sappers and Miners, which was subsequently removed to Chindwarrah. It was originally intended that this station should have been a sanitarium for Kamptee, but the idea was abandoned in consequence of its unhealthiness. The average strength of the Native Detachment was 81. There were 111 admissions in hospital during the time it was stationed in this place, of which 45 were from fevers and 10 rheumatism. Two deaths occurred from respiratory diseases.

CHINDWARRAH.

Sickness and mortality. 370. The returns for this station are for the same company of Sappers and Miners which were moved from the former station of Moottoor. They only extend over a period of 23 weeks. During this time the admissions into hospital decreased to 74, the daily sick to 2, and the deaths to 1, showing an improvement in the health of the company from the change of station.

PEGU DIVISION.

371. The following is a list of Stations situated in the Pegu Division, and garrisoned by Native troops :—

Rangoon.	Tonghoo.
Thayetmyoo.	Shoagheen.
Moulmein.	

Sickness and mortality. 372. The average strength of the Native troops serving in Burmah, made up of the corps as per margin, has been 2,589. The total number of admissions into hospital which took place during the year under review amounted to 2,076; while the average daily sick has been 104·9, and the deaths which occurred in hospital 25.

Sickness and mortality of previous years. 373. The following statement shows the rates of sickness and mortality in this Division amongst Native troops as compared with previous periods :—

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six years.	1866.
Admissions - - - -	1247·4	842·5	722·8	586·3	989·9	867·2	964·6	801·8
Daily sick - - - -	59·6	49·4	26·0	42·5	58·1	49·0	49·4	40·5
Deaths in hospital - - -	14·6	15·7	6·9	14	16·3	12·2	14·0	9·6
missions from cholera -	1·2	0·3	-	-	-	0·7	0·5	-
Deaths from cholera - -	0·6	0·3	-	-	-	-	0·2	-
Average Strength - - -	9,751	6,015	3,312	2,761	2,684	2,524	4,507·8	2,589

The strength of Native troops serving in Burmah has during the last two years considerably diminished, there having been 7,162 men less in the Division than in 1860. The rate of admissions into hospital is less than the average of six previous years by 162·8, and 65 per mille below what it was in 1865. The daily average sick is also much less. The death rate is lower than that of any other year since 1860, excepting the year 1862, when it was as low as 6·9 per mille.

Remarkable absence of cholera. 374. One cannot help being struck with the remarkably small amount of cholera which has prevailed in this Division. Amongst Native troops, during the past year, there has been no case, and it was also absent in 1862, 1863, and 1864, the average rate for the whole period being ·5 per mille of admissions and ·2 of deaths.

The

The admissions from fevers in this Division have been low as contrasted with other Divisions, being at the rate of 230·8 per mille. There were 582 admissions from intermittent fever, 7 of remittent, and 9 of continued fever. Prevalence of bowel complaints.

375. Cases of bowel complaints are comparatively very high; 158 cases of dysentery and 176 cases of diarrhoea have been admitted, these being at the rate of 61 and 67 per mille, and far above any other Division.

Rheumatic cases also stand high, viz., 57·9 per mille.

Venereal diseases are higher than in any other Division; 95 cases have been admitted, or 36·6 per mille. The separation of the men from their families is the probable reason for this.

376. The largest number of deaths which has been recorded from any one disease is due to dysentery, from which 5 deaths have occurred. Fevers contribute 3, and dropsy 2. Atrophia has produced 4 deaths. Deaths.

RANGOON.

377. The average strength of the Native troops* serving in Rangoon, as shown in the margin, has been 741. The total admissions into hospital have been 623; the daily average sick 37·0, and the deaths 7. Sickness and mortality.

Twenty-nine men have been invalided.

*26th Regiment N. I.
3rd Regiment L. I.
Native Details.

378. Compared with other stations, Rangoon has been a sickly one during the past year for Native troops. Its admissions are at the rate of 840·8 per mille, and its daily sick 49·9 per mille. It stands seventeenth on the list of twenty other stations as regards the former element, and last but one as regards the latter. Contrast with other stations.

The death rate has not been high (9·4 per mille), it being seventh on the list as regards this element.

379. The causes of the increased number of admissions at Rangoon are chiefly bowel complaints; the admissions from these diseases vary in a higher proportion than in any other station of its class. Causes of high rate of sickness.

There have been 48 cases of dysentery and 62 of diarrhoea, these being at the rate of 64 and 83 per mille.

Rheumatic cases are also high. The admissions from intermittent fever are low, only 118 cases having been under treatment.

380. Of the deaths, 3 occurred from dysentery, 1 diarrhoea, 1 dropsy, 1 inflammation of the bladder, and 1 from atrophia. Deaths.

THAYETMYOO.

381. The Native troops at this station, as per margin, have an average strength throughout the year of 667 men. The total admissions into hospital have been 327; the daily average sick 15·2; and the deaths 6, half of which occurred in hospital. Sickness and mortality.

5th Regiment N. I.
30th Regiment N. I.

382. Contrasting this station with others of its class, it appears to have been healthy. Contrast with other stations

Its admission rate is 490·3 per mille, which places it eighth on the list of twenty other stations. It is tenth on the list as regards its daily sick rate, which is 22·8 per mille.

As regards the death rate in hospital, Thayetmyoo has the lowest rate of mortality of any other station in the Madras Presidency excepting Raipore.

The rate of admissions from all the principal diseases which usually attack Native troops is low.

Only 64 cases of intermittent fever have been admitted.

383. Cases of rheumatism show the greatest proportion of admissions, viz., 50·9 per mille. Admissions

384. A death occurred from pericarditis and anasarca. Deaths

MOULMEIN.

Sickness and mortality.
*9th Regiment N. I.
25th Regiment N. I.

385. The average strength of the troops* stationed at this place during the year 1866 amounts to 604. The total admissions into hospital have been 317, the daily sick 18·57, and the deaths 6.

Contrast with other stations.

386. Moulmein has not been quite so healthy as the former station, as it stands two places lower down the list as regards its admission rate, which is 524·8 per mille.

Its daily sick has been high, viz. 30·7, which places it fifteenth on the list. Its death rate is 9·9, which, contrasted with other stations, is not high. It is tenth on the list as regards this element.

Admissions.

387. The chief proportion of admissions is made up of rheumatism and bowel complaints, which stand at the rate of 59·6 and 171·4 per mille, respectively.

Only 23 cases of fevers have been admitted.

Deaths.

388. Of the deaths, 1 occurred from small-pox, of which disease there were three admissions. Asthenia and Anæmia each contribute 1 death. Diseased heart, rheumatism, and dyspepsia are the causes of 1 death each.

TONGHOO.

Sickness and mortality.
*16th Regiment N. I.

389. The average strength of the Native Corps* at this station has been 571. The total admissions have been 399; the daily sick 16·8; and the deaths 8, of which 7 were in hospital.

Contrast with other stations.

390. Its admission rate is 698·7 per mille, which places it comparatively low amongst other stations. Its daily sick rate is 29·5 per mille, and its death rate 12·2.

As has been before noticed in the Burmese stations, the comparative rate of admissions from bowel complaints is rather high.

Two deaths from dysentery occurred in hospital; also a case of phthisis and 2 cases of intermittent fever.

The death out of hospital was from apoplexy.

SHOAGHEEN.

Sickness and mortality.

391. This is a small detached station, whose average strength for the year 1866 has been 127 men, made up by a detachment of 16th Regiment L.I., and 3rd Regiment L.I.

The admissions have been 242, and the daily sick 6·9; only 1 death occurred.

From the number of admissions into hospital, the station would not appear to be very healthy, but the strength is too small to admit of comparisons.

The admissions were chiefly cases of intermittent fever, of which disease alone there were 189 under treatment. One death occurred from this disease.

STRAITS.

392. The following is a list of stations occupied by Native troops of the Madras Army in the Straits of Malacca:—

Singapore.		Malacca.
Penang.		Labuan.

The sick returns from the above stations, together with those from Port Blair in the Andaman Islands occupied by Madras troops, have not been included in any of the divisional returns; they are therefore noticed separately here.

SINGAPORE.

393. The strength of the corps* serving at this station has been 561. Sickness and mortality.
 The total admissions have been 762, the daily average sick 17·5, and the deaths three. *8th Regiment N. I.

394. The admission rate at Singapore is very high, being no less than 1358·2 per mille, which places it third on the list as to its comparative salubrity. Contrast with other stations.
 Its daily average sick is 31·2, giving it the third place as regards this element.

The death rate has been very low, only 5·3 per mille, placing it first on the list of all other stations of its class.

395. The admissions have been made up by a very large number of cases of intermittent fever, of which 545 or 971·4 per mille have been admitted. Admissions.
 The proportion of admissions from rheumatism and diarrhœa are also high.
 There was no cholera during the year.

PENANG.

396. The average strength of the troops* at this station has been 467. Sickness and mortality.
 Out of this number there have been 254 admissions into hospital, a daily average sick of 13·8, and five deaths. *35th Regiment N. I.

397. Compared with other stations it cannot be considered to have been unhealthy during the past year. Contrast with other stations.

Its admission rate is 543·9 per mille, and the death rate 10·7 per mille.
 The proportion of admissions from diarrhœa, from which disease three deaths occurred, is higher than most other stations in the Presidency, viz., 74·9 per mille.

There has been no cholera.

MALACCA.

398. The average strength of this station made up of the detachments as per margin, has been 183. The total number of admissions have been 117; the daily sick has been 5·2, and the deaths one. Sickness and mortality.
 Its admission and daily sick rates have been comparatively low. Detachment 34th Regiment L. I.
Detachment 8th Regiment N. I.
Detachment 35th Regiment N. I.
 No cholera prevailed during the year.

LABUAN.

399. This station has had an average strength of 164, made up by the detachments of corps as per margin. Sickness and Mortality.
 It has been a sickly station during the year on account of a large number of admissions from fever (310), making up a rate of 1890·2 per mille from this disease alone. Detachment 35th Regiment N. I.
Detachment 8th Regiment N. I.
 The total rate of admission from all diseases amounts to 2402·4 per mille.
 One death occurred from dysentery.

PORT BLAIR.

400. The strength of this station made up by detachments of Sappers and 25th Regiment N. I., has been 191. Sickness and mortality.

The admissions have been 286; the daily sick 8·9, and the deaths one.
 It has a high sick rate, viz., 1497·3 admissions per mille, and 46·5 per mille daily sick.

The admissions are chiefly to be noticed for a very high rate of admissions from dysentery.

The number of cases admitted amount to 28, or 146 per mille.

The cases of rheumatism are in similar proportion.

The cases of intermittent fever amount to 49, which is not a large number comparatively.

One death occurred from the diathetic order of disease.

No case of cholera occurred.

Sickness and mortality of divisions.

401. The following statement shows the amount of sickness and mortality amongst Native troops in each division of the army of the past year contrasted with previous periods :—

ADMISSIONS.

Rate per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average for Six Years.	1866.
Southern Division - - -	677.4	504.1	431.1	440.5	503.3	405.8	500.8	370.5
Ceded Districts - - -	664.1	535.6	477.4	601.0	646.1	687.0	599.5	1058.7
Mysore Division - - -	709.2	593.9	624.7	524.7	756.1	729.0	656.9	730.8
Centre Division - - -	1225.4	771.2	610.4	536.5	578.2	565.9	715.2	609.5
Northern Division - - -	1019.1	586.4	604.2	770.2	663.1	622.0	721.6	823.2
Hyderabad Subsidiary Force -	985.7	726.2	1009.3	1195.2	840.9	610.1	953.1	984.4
Pegu Division - - -	1247.4	842.5	722.8	586.3	989.9	867.2	964.6	801.8
Nagpore Force - - -	910.6	622.1	1131.6	1045.3	1207.5	1353.1	1029.3	1200.3

DAILY SICK.

Southern Division - - -	25.7	16.8	13.3	8.0	15.0	14.1	15.8	15.9
Mysore Division - - -	31.7	22.3	21.1	8.9	13.0	29.1	21.4	26.8
Ceded Districts - - -	30.7	21.5	16.1	18.8	24.1	26.4	22.9	39.0
Northern Division - - -	40.7	25.2	23.1	27.5	23.6	22.2	27.7	29.3
Hyderabad Subsidiary Force -	39.0	26.0	31.0	31.2	26.8	27.4	31.2	44.9
Nagpore Force - - -	43.1	19.8	30.0	31.7	37.6	43.2	34.7	36.3
Centre Division - - -	83.1	51.7	30.7	24.3	29.3	23.9	40.7	29.3
Pegu Division - - -	59.6	49.4	26.0	42.5	58.1	49.0	49.4	40.5

DEATHS IN HOSPITAL.

Ceded Districts - - -	8.9	4.0	7.4	6.3	11.5	6.5	7.4	18.7
Mysore Division - - -	11.6	9.9	7.9	5.7	11.3	10.8	9.6	11.7
Hyderabad Subsidiary Force -	10.1	8.8	12.0	4.8	7.3	12.2	10.1	10.5
Northern Division - - -	12.7	10.0	7.5	7.9	17.1	8.1	10.7	16.4
Southern Division - - -	17.8	8.3	11.8	13.8	6.3	12.1	12.0	8.9
Pegu Division - - -	14.6	15.7	6.9	14.8	16.3	12.2	14.0	9.6
Centre Division - - -	21.5	14.3	11.6	5.0	12.4	21.1	14.1	18.2
Nagpore Force - - -	21.0	4.5	11.1	21.2	14.7	18.7	15.6	9.4

From an examination of the above table, it will be observed that the Southern Division occupies the first position in order of salubrity amongst the other divisions, not only as to its admission rate, but also as to the average number of daily sick in hospital.

It takes this place not only during the past year, but for the previous six years, which is almost sufficient to entitle it to be considered the healthiest division for Native troops in the Presidency. This may probably be accounted for by its equable climate.

Its death rate in hospital, almost lower than any other during the past year, has not been so for the average of six years, as it occupies the fifth position in this respect.

In the year 1863, the Southern Division appears to have been most remarkably healthy : the admissions into hospital were at the rate of 440.5 per mille, its daily sick 8.0, and the death rate 6.3. Such low rates of sickness and mortality are not to be found in any other division at any period.

Next to the Southern Division comes the Mysore Division, in respect of general salubrity, and then the Ceded Districts.

The Nagpore Division is undoubtedly the most unhealthy part of the Presidency in which our Native troops have to serve.

Its average admission rate for 1866 and for the previous six years is far above that of any other division. Its daily average sick is not so high as the Pegu or Centre Division, but its average death rate is greater than both.

This insalubrity is chiefly caused by the malarious influences to which the Nagpore Division is exposed, from the large amount of jungle which exists in the neighbourhood of the large stations.

The high ranges and extremes of temperature are also hostile to the sepoys enlisted in the Madras Army.

Next to the Nagpore Division, the troops serving in Burmah are the most unhealthy.

402. The following Table shows the rates of admissions and deaths from some of the principal diseases which have been treated in hospital during the past year: Divisional sickness and mortality from special diseases.

	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Rheumatism.		Parasitic Diseases.		Guinea Worm.		Venereal Diseases.		Hepatitis.		Atrophia and Anæmia.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Centre Division - -	172.0	1.8	29.6	0.5	40.8	1.1	17.3	9.1	47.2	-	19.3	-	17.9	-	22.3	-	2.0	-	18.7	0.2
Southern Division - -	60.0	0.9	14.1	0.3	13.0	1.4	4.4	2.9	44.0	-	23.9	-	0.7	-	30.2	-	-	-	7.0	0.7
Mysore Division - -	367.3	2.7	16.6	1.1	27.0	1.1	5.2	2.2	35.1	0.3	31.5	-	0.6	-	19.3	-	1.9	0.3	22.7	0.8
Ceded Districts - -	583.0	3.	24.8	0.7	47.6	1.4	9.0	3.2	58.4	0.7	8.6	-	9.3	-	35.3	-	2.1	0.3	18.7	0.3
Northern Division - -	412.2	1.3	24.6	0.7	17.0	0.2	15.7	6.0	75.9	1.5	20.9	-	-	-	20.9	-	1.8	0.2	13.6	1.8
Hyderabad Subsidiary Force.	636.1	2.4	22.4	1.0	38.7	0.3	3.6	2.5	22.8	-	11.9	-	11.2	-	15.2	-	2.5	-	3.9	0.3
Nagpore Force - -	783.1	2.5	32.1	0.3	21.7	0.3	1.9	0.9	43.1	0.3	10.0	-	0.6	-	22.7	-	1.2	-	7.7	0.3
Pegu Division - -	230.8	1.0	61.0	1.9	67.9	0.3	-	-	57.9	0.3	43.6	-	1.1	-	36.6	-	1.5	-	30.9	1.5

403. The admissions into hospital from this order of disease during the year 1866, have amounted to 16,291, and the deaths to 214. Sickness and mortality from miasmatic diseases.

The average admissions of six previous years amount to 15,120.8, and the deaths to 237.6.

As a proof of how important an order of disease the miasmatic is, and how largely it enters into the sick returns of the Native army, it may be roughly stated that two-thirds of the total admissions are made up by it and more than three-fifths of the deaths.

404. The following Table shows the prevalence of miasmatic diseases in the Native army, as contrasted with previous periods:— Contrast with former years.

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	533.1	370.7	438.0	425.9	493.5	509.9	461.1	565.9
Deaths - -	8.9	5.8	5.2	5.2	8.4	10.0	7.2	7.4

As will have been seen from what has been previously written, there has been a considerable increase in the admissions from this order of disease during the past year.

In no year out of the period under review, has there been so high a rate of malarious diseases.

This has been more marked in some parts of the Presidency than in others, but, on the whole, there has been a general increase throughout all our military stations.

It is satisfactory to find that, with so large an increase of sickness from this cause, the mortality is not much above the average; in fact, it is lower than that of the year 1865.

405. The following Table shows the rates of admissions and deaths from this order of disease, comparatively arranged:— Comparative prevalence of, at stations.

Stations.	Miasmatic Diseases.		Ratio to Strength per Mille.		Stations.	Miasmatic Diseases.		Ratio to Strength per Mille.	
	Admissions.	Deaths.	Admissions.	Deaths.		Admissions.	Deaths.	Admissions.	Deaths.
Cannanore - -	135	2	102.6	1.5	Tonghoo - -	184	4	322.2	7.0
Trichinopoly - -	188	10	147.2	7.8	Waltair - -	285	9	338.8	10.7
Thayetmyoo - -	142	1	212.8	1.4	Berhampore - -	256	8	339.1	10.5
Palamcottah - -	160	3	239.1	4.4	Bellary - -	598	14	404.3	9.4
Mangalore - -	205	6	266.9	7.5	Mercara - -	310	8	419.4	10.8
Vizianagram - -	194	4	275.9	5.6	Rangoon - -	337	4	454.7	5.3
Samulcottah - -	208	3	286.8	4.1	Kamptee - -	1,147	9	795.7	6.2
Moulmein - -	176	2	291.3	3.3	Secunderabad - -	2,118	15	808.7	5.7
Fort St. George - -	624	37	309.0	18.3	Raipore - -	596	-	837.0	-
Cuddapah - -	243	6	309.5	7.6	Singapore - -	633	1	1128.3	1.7
Bangalore - -	790	21	315.8	9.4	Mysore - -	942	4	1347.6	5.7
Vellore - -	386	4	319.3	3.8	Kurnool - -	1,335	6	2100.7	9.3

From this table it will be observed that Cannanore and Trichinopoly suffered less from miasmatic diseases than other station of the army.

Kurnool, Mysore, Singapore, Raipore, Secunderabad, and Kamptee, have all suffered severely from malarious disease.

The principal diseases which make up this order will now be separately noticed, but before doing so, the admissions from venereal diseases will be considered.

Venereal diseases.

406. Venereal diseases are not frequent causes of admissions into hospital in the Native army, principally from the fact that the sepoy's live with their families.

Even when this disease is contracted, the men rarely report sick from it, unless it is of such a nature as really to interfere with the performance of their duties.

Prevalence during former years.

407. The following Table, however, showing the prevalence of this disease during the year 1866 and previous periods, is interesting for the sake of comparison :—

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	43·8	32·4	29·1	21·7	22·5	26·2	30·5	24·2

The rate of admissions of Europeans during 1866 from this disease is 234·7 per mille; and the average for six years 270·5 per mille, being just ten times greater than what is shown by the above figures.

Contrast with other Presidencies.

408. In the Bengal Native army the admissions from venereal diseases are at the rate of 51·1 per mille for 1865, and in Bombay 24·1 per mille.

The higher rate in Bengal may perhaps be accounted for by the men being separated from their families.

Sickness and mortality from small-pox.

409. The total admissions from small-pox in the Native army during the year 1866 have been 68, out of which there were three deaths.

The average number that has been admitted during the six previous years is 74·3, and the deaths 3·8.

Prevalence in former years.

410. The following statement shows the rates of admission and deaths from this disease during 1866, as contrasted with previous years:—

Per Mille of Average Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	4·0	1·3	2·5	1·5	1·7	1·6	2·2	2·4
Deaths - -	·2	·02	·1	·1	·07	·04	·1	·1

It will be observed that there has been no great difference in the prevalence of this disease during the past year on that of previous periods. The greatest number of admissions took place in 1860.

Contrast with other Presidencies.

411. The admissions in the Bengal regular Native army in 1865 amount to 2·1 per mille, and the deaths to ·28.

In the Bombay army, the admissions are ·2 per mille, and no deaths.

Sickness and mortality from dysentery.

412. The total number of admissions from dysentery during the year has been 773, out of which there have been 24 deaths.

The average admissions for six previous years is 761, and the deaths 21·5.

413. The

413. The following statement shows the rates of admissions and deaths from this disease for 1866, as contrasted with previous years :—

Contrast with previous years.

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	29.0	20.1	20.2	17.0	20.3	32.1	23.2	28.4
Deaths - -	1.1	.6	.4	.3	.4	.6	.6	.8

There has been a decrease during the year 1866 in the rate of admissions from this disease on that of the previous year, but an increase on the six-year average of five per mille. The mortality has been about the same.

414. The following Table shows the rate of admissions from this disease at the chief military stations occupied by native troops, comparatively arranged :—

Comparative prevalence of, at stations.

Stations.	Admissions.	Deaths.	Ratio to Strength per Mille.		Stations.	Admissions.	Deaths.	Ratio to Strength per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Vizianagram -	1	-	1.4	-	Fort St. George -	50	1	24.8	0.4
Cannanore -	6	-	4.5	-	Mangalore -	22	4	27.5	5.0
Mysore -	6	1	8.5	1.4	Raipore -	21	-	29.4	-
Samulcottah -	8	-	11.0	-	Kurnool -	19	1	29.4	1.5
Trichinopoly -	16	-	12.5	-	Kamptee -	44	1	30.5	0.6
Bangalore -	35	-	15.7	-	Singapore -	19	1	33.8	1.7
Palamcottah -	12	1	17.9	1.4	Waltair -	30	2	35.5	2.3
Vellore -	20	1	19.0	0.9	Mercara -	30	1	40.5	1.3
Thayetmyoo -	14	-	20.9	-	Bellary -	78	1	52.7	0.6
Berhampore -	16	-	21.1	-	Rangoon -	48	3	64.7	4.0
Cuddapah -	17	1	21.6	1.2	Tonghoo -	42	2	73.5	3.5
Secunderabad -	57	2	21.7	0.7	Moulmein -	45	-	74.5	-

From this table it will be observed that dysentery has been most prevalent at the stations of Moulmein, Tonghoo, and Rangoon, in Burmah.

Bellary has also suffered from a large proportion of this disease.

It will be remembered that it was remarked in another portion of this report that the Europeans had suffered largely from bowel complaints at this place.

Vizianagram, Cannanore, and Mysore, have been most free from this disease.

415. The number of cases of diarrhœa which has been admitted during the past year amounts to 886, out of which there have been 23 deaths.

Sickness and mortality from diarrhœa.

The average number admitted during the six previous years amounts to 1041.3, and the deaths to 33.1.

416. The following Table shows the rates of admissions and deaths from this disease for the past year, as contrasted with six previous years :—

Sickness and mortality in former years.

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	49.2	24.7	25.4	24.9	28.9	32.5	31.7	32.5
Deaths - -	1.2	1.3	.4	.4	1.2	1.2	1.0	.8

The rate of sickness from this disease has been slightly in excess of the average, but precisely what it was during the year 1865. The mortality during the past year has shown a decrease on both periods.

It is to be observed that there has been a marked decrease in the prevalence of bowel complaints in the Native army since the year 1860.

In the latter year the admissions from dysentery and diarrhoea were 3,404, and the deaths 104, or at the rates of 78·2 and 2·3 per mille.

In 1866 there have been 1,659 admissions and 47 deaths, or at the rates of 60·9 and 4·2 per mille.

Contrast with
other Presidencies.

417. In the Bengal Presidency during 1865 the admissions from dysentery in the Native army generally were 100·2 per mille, and the deaths 1·25 per mille. From diarrhoea the admissions were 80·5 per mille and the deaths 1·37 per mille.

Contrasted with the Madras Presidency, Bengal shows an excess of 120 per mille of admissions, but a lower rate of deaths.

In Bombay in 1865 the admissions were at the rate of 67·3, and the deaths 1 per mille.

Comparative pre-
valence of, at
stations.

418. The following Table shows the rate of admissions from this disease at the chief military stations occupied by Native troops, comparatively arranged :

Stations.	Admis- sions.	Deaths.	Ratio to Strength per Mille.		Stations.	Admis- sions.	Deaths.	Ratio to Strength per Mille.	
			Admis- sions.	Deaths.				Admis- sions.	Deaths.
Cannanore - -	6	-	4·5	-	Waltair - - -	22	1	26·1	1·1
Cuddapah - -	4	1	5·0	1·2	Berhampore - -	21	-	27·9	-
Samulcottah - -	4	-	5·5	-	Fort Saint George - -	69	4	34·1	1·9
Palamcottah - -	7	1	10·4	1·4	Secunderabad - -	101	1	38·5	0·3
Trichinopoly - -	19	1	14·8	0·7	Mercara - - -	35	3	47·3	4·0
Raipore - - -	11	-	15·4	-	Mangalore - - -	38	1	47·7	1·2
Vizianagram - -	12	-	17·0	-	Singapore - - -	28	-	49·9	-
Thayetmyoo - -	12	-	17·9	-	Tonghoo - - -	29	-	50·7	-
Bangalore - - -	44	1	19·8	0·4	Bellary - - -	79	3	53·4	2·0
Mysore - - -	14	1	20·0	1·4	Kurnool - - -	50	-	77·5	-
Kamptee - - -	29	-	20·1	-	Rangoon - - -	62	1	83·6	1·3
Vellore - - -	26	-	24·7	-	Moulmein - - -	58	-	96·9	-

The same remarks which have been made regarding the heading of dysentery as to the prevalence of this disease at certain localities apply equally here.

Bellary and the Burmese stations have suffered in a greater proportion from diarrhoea.

Cannanore, Cuddapah, and Samulcottah have been remarkably free.

Sickness and
mortality from
cholera.

419. The total number of admissions from cholera in the Native army during the year 1866 has been 204, out of which number 95 have died.

The average number of cases admitted during the past six years amounts to 253·5 and the deaths to 104·5.

During 1865 there were 278 cases admitted, and 133 deaths.

It therefore appears that there has been a considerable decrease in this disease amongst the Native troops serving in this Presidency on both the above periods.

Sickness and
mortality in
former years.

420. The following Table shows the rate of admissions from this disease in the Native army for 1866, as contrasted with previous periods :—

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1866.
Admissions -	8·3	4·2	6·1	7·5	10·3	11·2	7·7	7·4
Deaths - - -	3·4	1·6	2·6	2·7	3·9	5·4	3·1	3·4

It will be observed that there has been but a very slight difference between the rates of sickness and mortality during the year 1866 and those for previous periods.

The year 1861 appears to have been particularly free from this disease, while 1865 shows a higher rate than any of the years under observation.

Contrast with
other Presidencies.

421. In the Bengal Presidency during 1865, the admissions and deaths were at the rates of 5·7 and 2·8 per mille.

In Bombay, for the same period, they were 10·7 and 5·2 per mille respectively.

422. The following statement shows the sickness and mortality from this disease in different divisions of the army for six previous years comparatively arranged:—

Comparative prevalence of, in divisions.

DIVISIONS.	1860.		1861.		1862.		1863.		1864.		1865.		Average.		1866.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Pegu Division - - -	1.2	0.6	0.3	0.3	-	-	-	-	-	-	0.7	-	0.5	0.2	-	-
Ceded Districts - - -	1.3	0.6	1.3	0.4	5.6	3.1	1.0	1.0	6.1	2.8	2.7	1.7	3.0	1.6	9.0	3.2
Mysore Division - - -	5.5	2.1	4.3	2.3	1.8	1.3	1.4	0.8	11.0	4.6	3.5	2.0	4.6	2.2	5.2	2.2
Northern Division - -	4.6	2.0	9.6	2.9	1.2	0.4	2.3	0.7	18.8	6.2	2.9	1.0	6.7	2.2	15.7	6.0
Hyderabad Subsidiary Force	9.9	2.7	0.5	0.2	10.2	4.8	-	-	6.4	1.2	16.8	9.3	7.3	2.9	3.6	2.5
Centre Division - - -	10.3	4.1	4.1	1.4	9.1	4.3	3.8	0.9	6.5	3.2	29.8	11.9	10.0	4.1	17.3	9.1
Southern Division - -	14.2	8.6	11.3	5.0	12.8	4.4	26.3	7.9	4.4	3.3	10.5	6.4	13.8	6.1	4.4	2.9
Nagpore Division - -	30.8	11.6	0.6	-	15.9	4.3	30.3	12.5	21.5	7.0	17.8	8.	20.1	7.6	1.9	0.9

An examination of the above table shows, what has been before observed; the remarkably small rate of admissions and deaths from cholera, observed in the Pegu Division.

During the past year, there has been an entire freedom from the disease amongst the Native troops serving in this part of the Presidency.

The same thing happened in 1862, 1863 and 1864. Excepting Hyderabad in 1863, this freedom has not occurred in any other division during the periods under observation.

423. The Ceded Districts, which are generally remarkable for the great prevalence of cholera amongst Europeans, as shown in the table under this head in another part of the Report, are here shown to be equally remarkable for the immunity from the disease which is enjoyed by the Native troops.

Peculiarities of cholera in the Ceded Districts.

This fact is a very singular one when it is remembered that in Kurnool, situated in this division, which has an unenviable notoriety for the prevalence and fatality of this disease amongst the European community, it does not extend to the Native troops quartered in the place.

The Nagpore Division has the largest average number of admissions from cholera, although during the year 1866 it has had the smallest rate of admissions from the disease.

The Centre and Northern Divisions during the past year are those which have suffered most from epidemic outbreaks of this disease.

424. The following Table shows the sickness and mortality from this disease at the following stations of the Madras Presidency during 1866:

Comparative prevalence of, at stations.

Stations.	Admissions.	Deaths.	Rates to Strength per Mille.		Stations.	Admissions.	Deaths.	Rates to Strength per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Cannanore - - -	-	-	-	-	Vizianagram - -	2	1	2.8	1.4
Mangalore - - -	-	-	-	-	Secunderabad - -	10	6	3.8	2.2
Rangoon - - -	-	-	-	-	Samulcottah - -	4	1	5.5	1.3
Mereara - - -	-	-	-	-	Yellore - - -	6	2	5.7	1.9
Raipore - - -	-	-	-	-	Bellary - - -	10	5	6.7	3.3
Thayetmyoo - - -	-	-	-	-	Trichinopoly - -	11	7	8.6	5.4
Moulmein - - -	-	-	-	-	Kurnool - - -	6	2	9.3	3.1
Tonghoo - - -	-	-	-	-	Bangalore - - -	24	12	10.8	5.4
Singapore - - -	-	-	-	-	Cuddapah - - -	12	2	15.2	2.5
Mysore - - -	1	-	1.4	-	Waltair - - -	14	5	16.6	5.9
Palamcottah - -	1	1	1.4	1.4	Berhampore - -	16	4	21.1	5.2
Kamptee - - -	4	1	2.7	0.6	Fort St. George -	53	28	23.2	14.8

From this statement it will be observed, out of 24 of our largest stations occupied by Native troops, nine have been entirely free from this disease during 1866.

The greatest ratio of admissions took place in regiments serving in Fort St. George, Berhampore, Waltair and Cuddapah.

Mysore, which was so unhealthy in other respects, it is to be noted, has only one admission and no death from this disease.

Sickness and mortality from fevers.

425. During the year 1866, there have been 10,951 cases of fever admitted into hospital, out of which 59 deaths have occurred.

Of these admissions 10,053 have been classed as cases of intermittent fever, 293 remittent and 605 continued.

The average number admitted during the six previous years, has been 9807·5, and the deaths 64·8.

Out of this number a great many cases would probably have been classed as cases of simple ephemeral fever, a term which does not now exist in the new nomenclature of disease in use throughout the army. Most medical officers are unanimous in regretting the non-existence of this designation which so accurately describes a large class of disease, as it cannot be doubted that its absence is a fertile source of erroneous classification both in the European and Native army medical returns.

Sickness and mortality in former years.

426. The following Table shows the rate of admissions from this disease in the Native army for 1866, as contrasted with previous periods :—

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six years.	1866.
Admissions - - -	358·2	228·2	282·2	288·5	297·3	341·2	299·1	402·2
Deaths - - -	2·8	1·6	1·2	1·2	2·3	2·1	1·9	2·0

From this it will be observed that there has been a very large increase in the rate of admissions from fever during the year 1866, both on that of 1865 and of the six years' average.

In no year amongst those under observation has the rate of admission been so high ; it is only a matter of satisfaction that the mortality has not increased in proportion.

The rate of mortality is slightly above that of the average, but below that of 1865.

Contrast with other Presidencies.

427. In the Bengal Presidency during the year 1865, the admissions from various forms of fever, but chiefly intermittent fever, were 24,003 out of an average strength of 32,129 of the regular army, or at the rate of 747·1 per mille. The mortality was only 4·38 per mille.

In Bombay for the same period, fevers were admitted at the rate of 477·9 per mille, with a mortality of 2·3 per mille.

Comparative prevalence of, at stations.

428. The following Table shows the rates of admissions and deaths from this disease at the chief military stations occupied by Native troops, comparatively arranged :—

Stations.	Admis- sions.	Deaths.	Ratio to Strength per Mille.		Stations.	Admis- sions.	Deaths.	Ratio to Strength per Mille.	
			Admis- sions.	Deaths.				Admis- sions.	Deaths.
Trichinopoly - -	43	2	33·5	1·4	Rangoon - -	120	-	161·8	-
Moulmein - -	23	-	38·0	-	Samulcottah - -	127	2	175·1	2·7
Cannanore - -	76	1	57·7	0·7	Vellore - -	190	1	180·6	0·9
Waltair - -	80	-	95·0	-	Cuddapah - -	150	1	191·0	1·2
Mangalore - -	76	-	95·2	-	Bellary - -	287	4	193·9	2·6
Thayetnyoo - -	71	-	106·3	-	Mercara - -	221	4	299·0	5·4
Berhampore - -	88	-	116·5	-	Secunderabad - -	1,696	6	647·3	2·2
Vizianagram - -	85	1	120·9	1·4	Kamptee - -	977	7	677·9	4·7
Palamcottah - -	81	-	121·1	-	Raipore - -	511	-	717·6	-
Tonghoo - -	82	2	143·5	3·5	Singapore - -	545	-	971·4	-
Fort St. George -	291	4	144·0	1·7	Mysore - -	857	2	1225·9	2·8
Bangalore - -	353	7	158·9	3·1	Kurnool - -	1,170	3	1813·9	4·6

From this table it will be observed that Trichinopoly, Moulmein, Cannanore, Waltair and Mangalore have been those stations of the Madras Presidency which have suffered least from this disease, their admissions being under a 100 per mille.

Kurnool,

Kurnool, Mysore, Singapore, Raipore, and Kamptee have suffered largely, the rate of admissions at these places having ranged from 677·9 to 1813·9 per mille.

The rate of mortality has been greatest at the last-named station.

429. Hepatic disease is not a common cause of admission amongst natives of this Presidency, and it is simply noticed here in order to afford us a means of instituting a contrast between its prevalence in the European and Native armies. Sickness and mortality from hepatic diseases.

The total number of admissions from this cause during the year amongst Native troops has been 47, out of which number four deaths are recorded.

The average number for a period of six years past has been 42·1, and the deaths 2·8.

During 1865 there were 32 admissions and three deaths.

430. The following statement shows the rates of admissions and deaths from this disease in the Native army for 1866 as compared with previous periods:— Sickness and mortality in previous years.

Per Mille of Strength.	1860.	1861.	1862.	1863.	1864.	1865.	Average of Six Years.	1866.
Admissions - - -	1·4	1·2	0·9	1·2	1·3	1·3	1·2	1·7
Deaths - - -	·02	·1	·06	·01	·1	·1	·08	·1

It is to be observed that a slight increase has taken place in the rate of admissions from this disease during the year, but that the death rate remains about the same.

In the Bengal Presidency, the admission rate from this disease was only two per mille, and the death rate ·28 in 1865, while in the Bombay Presidency for the same period it was 2·2 and ·3 per mille respectively.

By a reference to Table II. at page 165 of the Appendix showing the admissions from this disease in the European troops, a striking contrast is afforded of the different degrees in which the two armies suffer from this complaint.

431. The following is a list of the Native regiments and detachments which have been engaged on the line of march during the year, and from which medical returns have been received. Native troops marching.

3rd, 32nd, 5th, 25th, 17th, 9th, 27th, 33rd, 21st, 16th, 30th, 8th, 34th Regiments N. I., details and detachments, Ordnance and Commissariat Departments.

An examination of the returns have shown the corps referred to, to have been remarkably healthy, and entirely free from any outbreaks of epidemic disease. No case of cholera occurred in any of the corps or detachments marching.

432. In the month of April 1865, the late Madras Sanitary Commission submitted a Memorandum to Government on the marching of Native regiments, and brought to notice that amongst other evil influences, poverty was one which had a considerable share in increasing the sickness and mortality amongst sepoys on the line of march. Cart funds for Native corps.

“Para. 28. It was shown that they have received advances of pay some considerable time before starting; a part of this advance has been retained to pay for the carts furnished for the use of the families, the rest has either been expended in paying small debts previous to leaving the station, or as is often the case, has been spent in dissipation.”

“The consequence is, that both the sepoys and their families, though the former receive batta while marching, are poorer and less well fed during a march than at any other time, and are consequently less able to resist the attack of epidemic disease.”

“Para. 31. For months before the march takes place, they are suffering from the reduction which is necessary in order to pay for carriage, or else the advances made at the time of a marching are nearly all swallowed up for carriage,

and they are half starved during the march. They are then under stoppages for a considerable time after they reach their new station. When the sepoy arrives at a new station he is put to other petty expenses before he settles down in the regimental lines."

In connection with this subject, the Commander in Chief, with the sanction of Government, issued the following general order :—

"The Commander in Chief having ascertained that the establishment of cart funds in the Native army is considered desirable, for the purpose of assisting in defraying the expenses attending the hire of carts from one station to another, in course of relief, directs, with the sanction of Government, that the following rules be adopted :—

"1. That a cart fund be established in every regiment of Native troops.

"2. That after a regiment shall have been two years at its new station, stoppages shall be commenced to meet the probable expenditure of the next relief.

"3. That the minimum rate of monthly stoppages shall be as follows :—

And ranks corresponding under G. O. G., No. 411 of 1861, paragraph 1.	1	rupee for a Subadar.
	12	annas for a Jemadar.
	8	" for a Havildar.
	5	" for a Naigue.
	3	" for a Private, and all authorised regimental followers.

"4. That whenever a regiment is ordered to move, this rate be regulated at the discretion of the commanding officer, with reference to the charge for cart-hire to be incurred.

"5. That the stoppages from regiments on foreign service commence after they have been 1½ year abroad, to pay for the carriage of their families to regimental head quarters.

"6. That the money collected be placed periodically in the Government savings' bank, a small sum being reserved in the regimental cash chest, to adjust the estates of casualties, &c. The deposit being made in the individual name of the commanding officer or the adjutant, or both. Any loss of interest occurring on changing the depositor's name being adjusted regimentally.

"7. Under the Hutting Rules, paragraph 74, the value of the huts advanced by Government to a regiment about to march, is available to assist the men in paying for their carriage, and can be added to the cart fund in whole or in part, at the discretion of the officer commanding the regiment, which, it is assumed, will afford ample means to adjust the hire of the carts for the whole distance.

"8. On occasion of a regiment embarking for foreign service, the money will be available for the carriage of the families to their homes, and in the event of the railway, or any other mode of conveyance being used, the money will be equally available.

"9. The difference between the old rates of cart-hire and those now prevailing is for the present paid by Government.

"10. The employment of the cart-fund for any purposes, even temporary, other than those specified in this order, is forbidden.

"11. All subsidiary rules and minor details connected with the cart fund, will be provided for under regimental arrangements and orders.

"12. The funds will invariably be closed and adjusted with the men on the arrival of the corps at its new station.

"13. The above rules will not apply to the Native artillery at Cuttack and Mangalore, nor to the corps of Sappers and Miners."

Native lines,
Madras.

433. A special inspection of the lines of Native Infantry regiments quartered in Fort St. George, has been made during the year in addition to the report on the Royapooram Lines alluded to above.

Many sanitary defects which chiefly related to site, drainage, and water-supply were brought to the notice of Government.

It has been decided by the Government to afford aid to the native regiment stationed

stationed at Royapooram in rebuilding their lines on an improved plan with sufficient drainage.

The lines at Perambore have been ordered to be improved, and a sufficient water-supply is to be secured. The site of the lines at Vepery have been condemned, and on the recommendation of a committee, of which the Sanitary Commissioner was a member, it has been resolved to transfer these lines to a more eligible site known as Lawder's Gardens.

434. The question of hospitals for Native regiments has been decided by the Government of India, and the standard accommodation for the sick of the Native Army has been fixed on a liberal scale, as the following decisions of the Government of India will show. Principles of hospital construction.

No. 1.—*Proposal.*

That single-storied buildings, having their floors raised three feet in dry climates, and five feet in damp climates, should suffice for Native regimental hospitals; but that when space is restricted, or when it is required to accommodate more patients than can conveniently be placed in one floor, a second storey may be resorted to. Single storied buildings.

Conclusion of the Government of India.

The Government of India approves of the proposal. Where soils retain much moisture, the buildings should have a vaulted basement.

No. 2.—*Proposal.*

That a single building should suffice for every description of Native regimental hospital. One building sufficient.

Conclusion of the Government of India.

The proposal is approved.

No. 3.—*Proposal.*

That the component parts of a Native regimental hospital should consist of— Component parts.

- | | |
|---|--------------------------------|
| 1. Wards for the sick. | 6. Out-door lavatory. |
| 2. Ward offices, viz., superintendents' rooms, sculleries, privies, ablution rooms. | 7. Out-door privy. |
| 3. Accommodation for Native doctors. | 8. Guard-room. |
| 4. Dispensary and receiving-room. | 9. Dead-house. |
| 5. Cook-room. | 10. Servants' houses. |
| | 11. Enclosure wall or railing. |

Conclusion of the Government of India.

The proposal is approved.

Detached wards for special diseases are not considered necessary for Native hospitals; a row of houses for the Native establishment should be added to the list. See also conclusion under Proposal No. 12.

No. 4.—*Proposal.*

That the following number of wards should suffice :—

Number of wards.

For infantry hospitals, two general and two small wards for special cases.

For cavalry hospitals, two general wards and one small ward for a full regiment, and one general and one small ward for a detachment.

Conclusion of the Government of India.

The Government of India approves of the proposal.

Punkahs are not considered necessary for Native hospitals, and Native officers can be attended either in the small wards or at their own houses.

No. 5.—*Proposal.*

Convalescents' wards.

That it does not seem necessary to provide convalescent wards for Native regimental hospitals.

Conclusion of the Government of India.

The proposal is approved.

No. 6.—*Proposal.*

Arrangement of beds.

That the beds should be arranged as recommended for European hospitals and barracks for unmarried European soldiers, viz., that they be arranged on the opposite sides of the wards, with their heads to the walls; that not more than two beds be placed in the wall-space between two doors on the same side of the ward, or between the opposite doors of the ward; that there be not less than half as many doors in the length of the wards as there are beds.

Conclusion of the Government of India.

The proposal is approved.

No. 7.—*Proposal.*

Dimensions of wards.

That all large wards should be 26 feet in width and 16 feet in height from floor to wall-plate, and that the wall-space per bed should be $7\frac{1}{2}$ running feet; thus giving an area of $97\frac{1}{2}$ square feet per bed.

Conclusion of the Government of India.

The Government of India considers that the space should be as follows :—

Width of ward	-	-	-	-	-	-	-	22 feet.
Height of ward	-	-	-	-	-	-	-	16 „
Wall-space per bed	-	-	-	-	-	-	-	9 „
Area per bed	-	-	-	-	-	-	-	99 suppl. feet.
Cubic feet per bed	-	-	-	-	-	-	-	1,584 cubic feet.

No. 8.—*Proposal.*

Attendants' rooms.

That an attendants' room, scullery, privy, and ablution-room should be attached to each large ward.

Conclusion of the Government of India.

The proposal is approved. See also conclusion under Proposal No. 12.

No. 9.—*Proposal.*

Dispensary.

That quarters for the Native doctor and the dispensary should be placed in the hospital-proper, close to the wards.

Conclusion of the Government of India.

The proposal is generally approved of by the Government of India.
See also conclusion under Proposal No. 12.

No. 10.—*Proposal.*

Out buildings.

That a cook-room, a privy, a lavatory, a guard-room, and a dead-house should be provided in out-buildings.

Conclusion of the Government of India.

The Government of India approves of the following recommendations that have been made by the several authorities regarding out-buildings.

The cook-room to be divided into two compartments, one for Hindoos and one

one for Musselmen; a well-ventilated building 36 by 14 feet, divided in the centre by a cross wall, and having doors at the opposite ends, will suffice.

The out-door lavatory to consist of a well, surrounded by a broad and well-raised chabutra, but without roof or screen-wall. A separate well for drinking-water and for culinary purposes is only to be allowed when the lavatory-well does not afford a sufficient supply for all purposes.

As it is not customary to carry out *post-mortem* examinations in Native hospitals, a simple enclosed shed, 12 feet square, will answer as a dead-house.

No. 11.—*Proposal.*

The special accommodation is not necessary for day rooms for the sick, for stores, hospital serjeant or orderlies.

Day rooms, orderlies, &c., &c.

Conclusion of the Government of India.

The proposal is approved.

No. 12.—*Proposal.*

That the proposed two plans of hospitals be approved.

Plans.

Conclusion of the Government of India.

The Government of India approves generally of the plans, with the necessary modifications to meet the conclusions regarding width of ward and running feet per bed.

The plan proposed by the Madras Commission is open to objection, in consequence of the position of the wash-houses and privies being immediately behind the two wings of the hospital, and because the projection of the central administrative offices would interfere with the ventilation of the wards.

The Government of India considers that the number of apartments provided in the plan for administrative and other purposes, will all be required, but that the precise way in which they should be turned to account, be left to be determined by experience.

The foregoing are the conclusions upon the whole of the proposals brought forward by Lieutenant Colonel Crommelin; it remains only to specify the number of patients to be provided for in hospitals for regiments of infantry and cavalry:

Infantry :									
Full regiment	-	-	-	-	-	-	-	-	50 beds.
Cavalry :									
Full regiment	-	-	-	-	-	-	-	-	25 beds.
Wing at head quarters.	-	-	-	-	-	-	-	-	13 „
Detached wing	-	-	-	-	-	-	-	-	12 „
When a Squadron is Detached :									
Head quarters	-	-	-	-	-	-	-	-	17 beds.
Detachment	-	-	-	-	-	-	-	-	8 „

435. During the year, orders were issued by Government that European tents for hospital use with Native troops might be issued generally, whether in cantonment or standing camps, in cases of epidemic disease during the hot season, when Native tents would be unsuitable for the purpose.

The above concession was granted in consequence of a representation by the medical officer of the 36th Regiment, N. I., the hospital of which corps was overcrowded during the hot season at Kamptee, and the sick obliged to be placed in tents.

436. During the year under report, the subject of the conservancy of the lines of Native regiments has received the attention of his Excellency the Commander in Chief, and an increased establishment under the careful superintendence of the regimental authorities, has, at his Excellency's recommendation,

Tents for hospital use in Native corps.

Conservancy of Native regimental lines.

tion, been sanctioned experimentally by the Government, as public latrines have not as yet been generally introduced into regimental lines.

Dry earth system,
Vepery Lines.

437. An experimental latrine on the dry earth system is being successfully worked in the Native infantry lines at Vepery.

The experiment has not been continued sufficiently long to speak definitely as to its results, but so far as it has gone it is a success.

I am of opinion that no difficulty will be met with in inducing the men of Native regiments resorting to a public latrine, but this cannot be expected of the women and children generally.

A proportion of private latrines will always therefore have to be provided in the compounds of the Sepoy huts, and for the expense attending the conservancy of these, the men themselves should be made responsible.

The old cess-pit system has been entirely discontinued.

It can never be expected that the conservancy system adopted in Bengal will be in all instances applicable to the Native corps in Madras, where it is customary for the families to live in the lines with a large number of their relatives and connections.

438. The accompanying diagrams have been prepared to illustrate, in a convenient form, the figures given in the Appendix of this Report.

Diagrams showing
the rate of sick-
ness and mortality
in the European
and Native army.

The importance attaching to this mode of expressing statistical results by graphic representations cannot be overrated.

In the Report by the Royal Commission appointed to inquire into the regulations affecting the sanitary condition of the army, full value is given to the use of diagrams, and in reporting upon the mortality of the British army at home and abroad, constant use is made of these means for the more clear delineation of facts; indeed, they commence their report by the assertion, that "diagrams are of great utility for illustrating certain questions of vital statistics by conveying ideas on the subject through the eye which cannot be so readily grasped when retained in figures, and these aids for giving greater clearness to the numerical results appertaining to every question which is brought forward in their Report."

To persons unaccustomed to figures, these diagrams will be found most useful, and will convey to the mind more easily than rows of figures, the following facts which have already received notice in this Report:—

I. Diagram showing the comparative rate of admissions into hospital per mille of strength of the army serving in the Madras Presidency for seven years, 1860-1866.

II. Diagram showing the comparative rate of deaths in hospital per mille of strength of the army serving in the Madras Presidency, for seven years, 1860-1866.

III. Diagram showing the total loss to the British army serving in the Madras Presidency, by deaths in hospital and invaliding for the past seven years, 1860-1866.

IV. Diagram showing the average admissions per mille into hospital in each division of the army of the Madras Presidency for a period of seven years, 1860-1866.

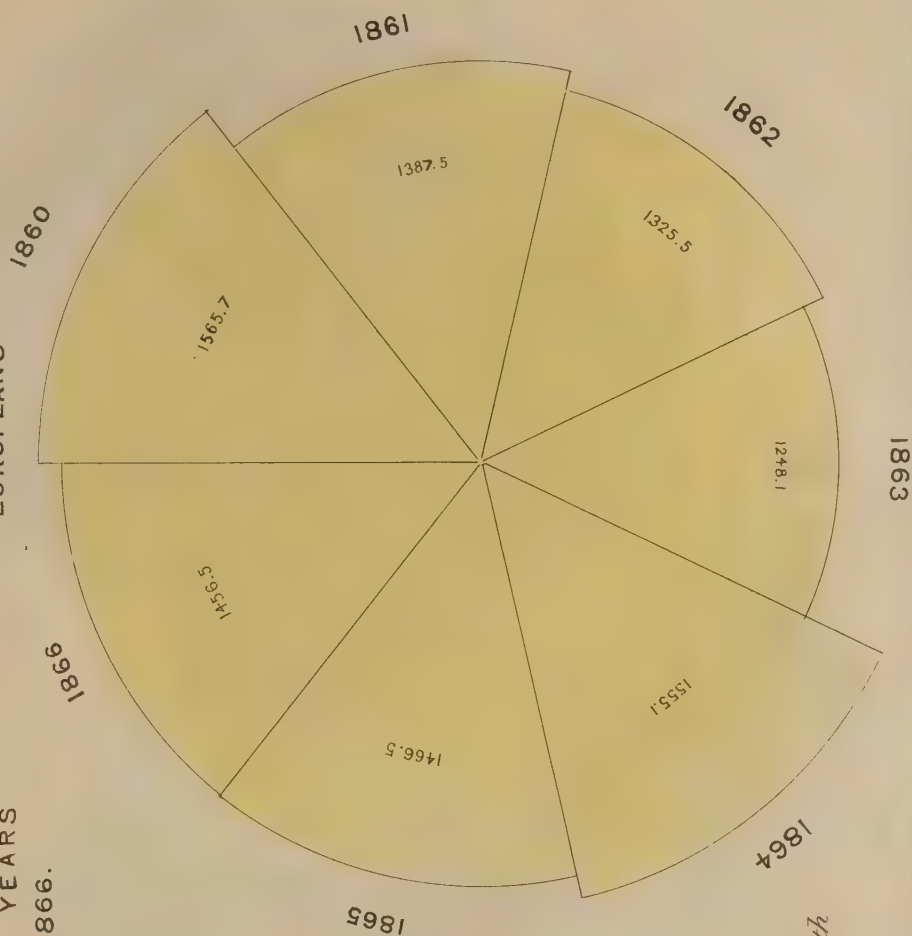
V. Diagram showing the average deaths per mille in hospital, in each division for a period of seven years, 1860-1866.

VI. Diagram showing the rate of admissions into hospital per mille, at the principal stations during 1866.

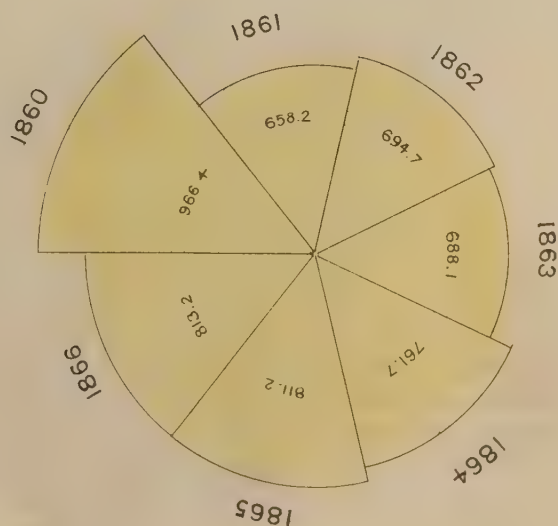
VII. Diagram showing the deaths in hospital per mille, at the principal stations during 1866.

N^o 1.
 DIAGRAM SHOWING THE COMPARATIVE RATE OF ADMISSIONS
 INTO HOSPITAL PER MILLE OF STRENGTH OF THE ARMY
 SERVING IN THE MADRAS PRESIDENCY
 FOR SEVEN YEARS
 1860 — 1866.

EUROPEANS

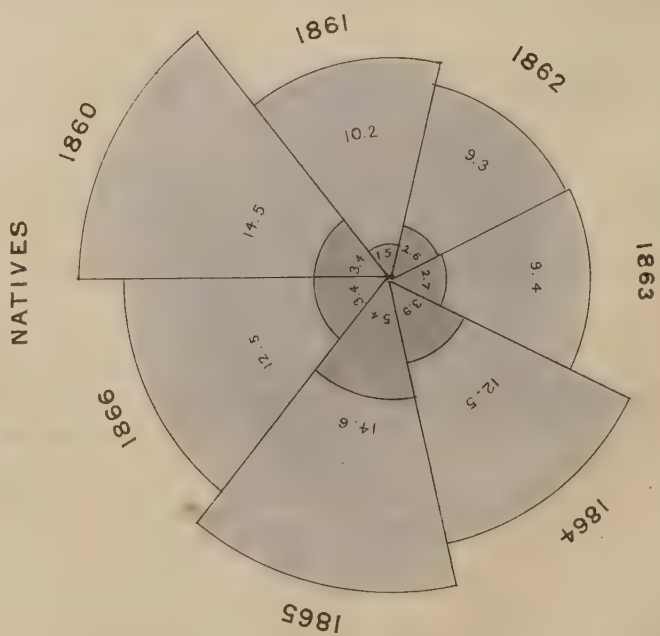
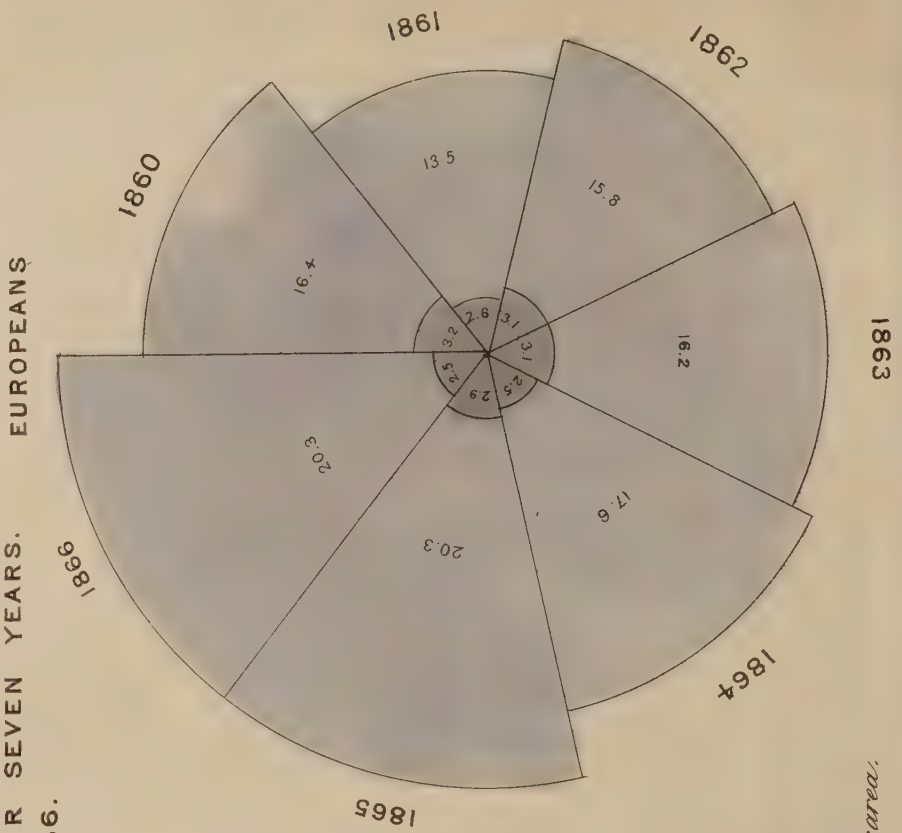


NATIVES



*Each Sector shows the admissions per Mille per annum.
 Each year admits of comparison by contrasting the length
 of the radii of each Sector.*

NO II.
 DIAGRAM SHOWING THE COMPARATIVE RATE
 OF DEATHS IN HOSPITAL PER MILE OF
 STRENGTH OF THE ARMY SERVING IN THE
 MADRAS PRESIDENCY FOR SEVEN YEARS.
 1860 - 1866.



Each Sector shows the deaths in Hospital per Mile per annum from all causes.
 The dark Sectors in the centre show the deaths from Cholera.
 Each year admits of comparison by contrasting the radii of the Sectors - not their area.

Nº III.

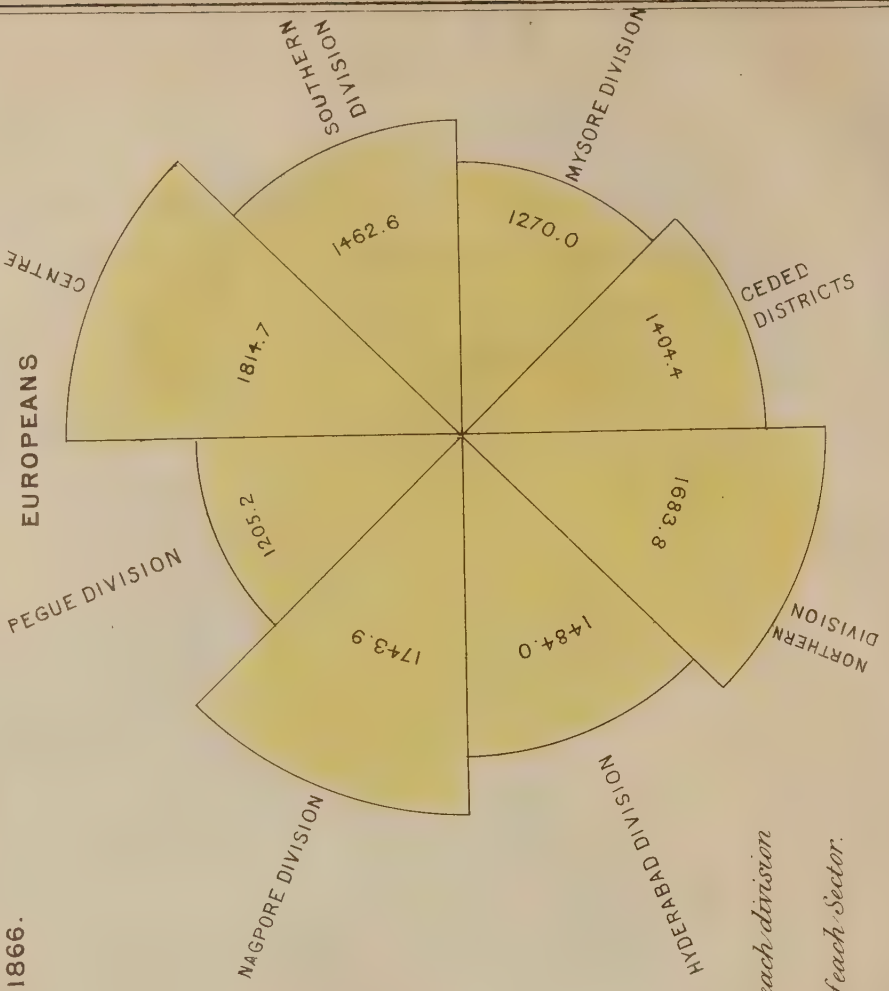
DIAGRAM SHOWING THE TOTAL LOSS TO THE
BRITISH ARMY SERVING IN THE MADRAS
PRESIDENCY BY DEATHS IN HOSPITAL AND
INVALIDING FOR THE PAST SEVEN YEARS.

1860-1866.

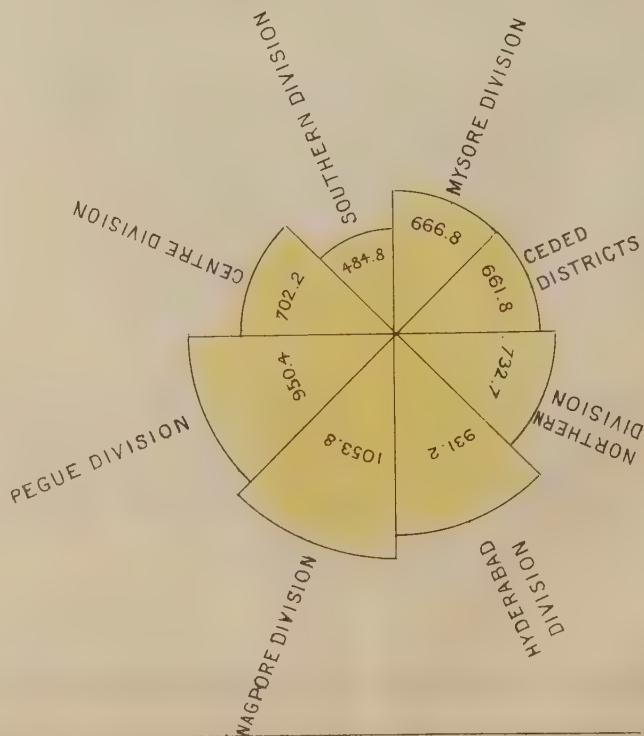


Each Sector measured from the centre represents the total loss to the British Army serving in the Madras Presidency by deaths and invaliding. The dark Sectors show the loss by deaths, and the blue the loss by invaliding. The dotted circle shows the Mortality per Mille of the unhealthiest town in England, viz. Manchester, 12.4 per 1000.

N^o IV.
 DIAGRAM SHOWING THE AVERAGE ADMISSIONS PER MILLE INTO HOSPITAL
 IN EACH DIVISION OF THE ARMY OF THE MADRAS PRESIDENCY
 FOR A PERIOD OF SEVEN YEARS.
 1860-1866.



NATIVES



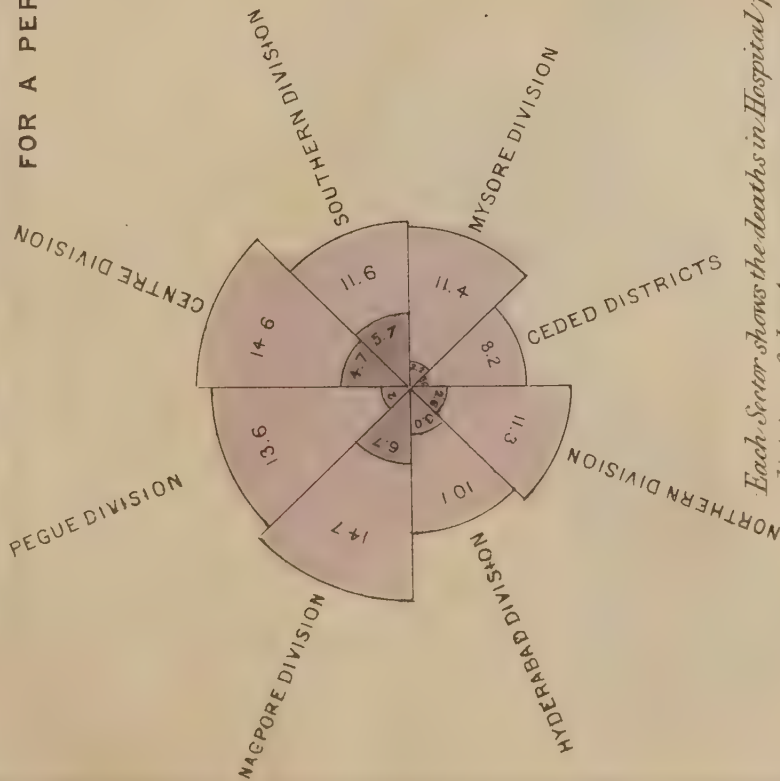
Each Sector shows the average admissions per Mille into Hospital per annum in each division of the Army.
 Each division admits of comparison by contrasting the radii; not the area of each Sector.

N^o V.

DIAGRAM SHOWING THE AVERAGE DEATHS
PER MILLE IN HOSPITAL IN EACH DIVISION
FOR A PERIOD OF SEVEN YEARS

1860-1866.

NATIVES

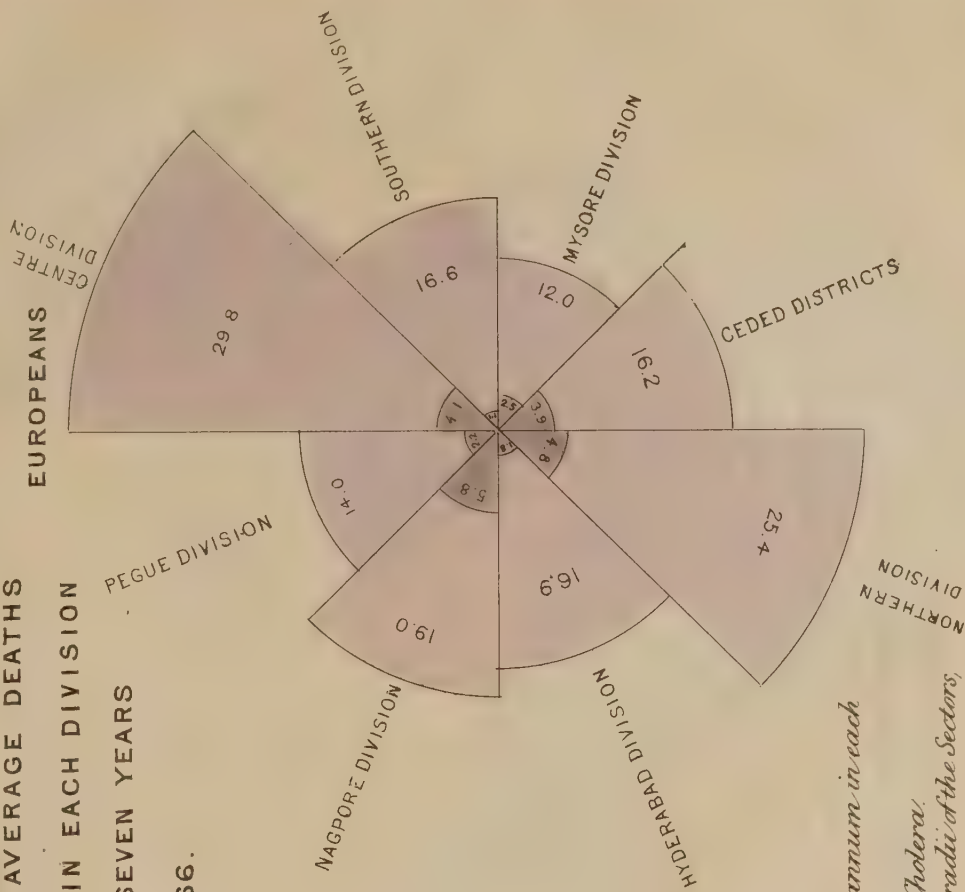


Each Sector shows the deaths in Hospital per Mille per annum in each division of the Army.

The dark Sectors in the centre show the deaths from Cholera.

Each division admits of comparison by contrasting the radii of the Sectors, not their area.

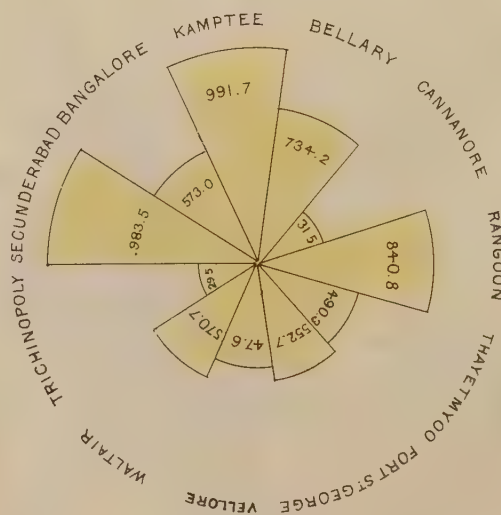
EUROPEANS



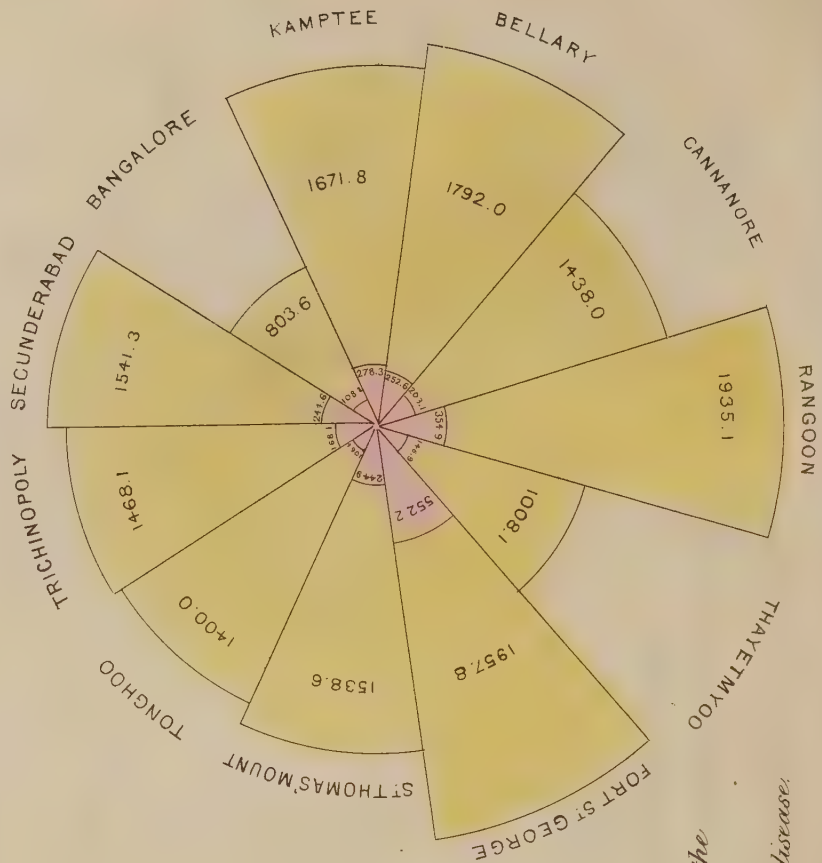
Nº VI.

DIAGRAM SHOWING THE RATE OF ADMISSIONS
INTO HOSPITAL PER MILLE AT THE PRINCIPAL
STATIONS DURING 1866.

NATIVES



EUROPEANS

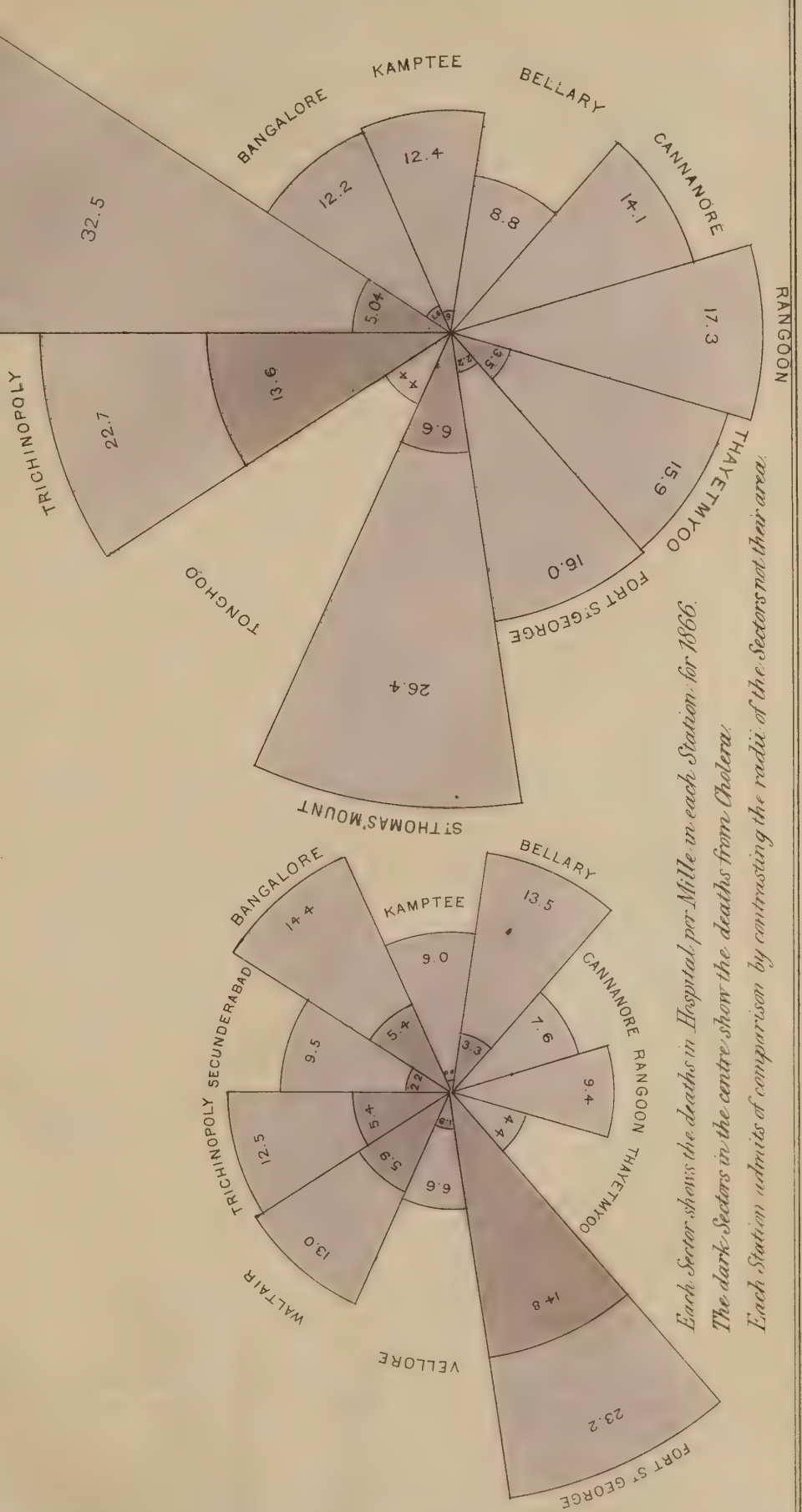


Each Sector shows the admissions into Hospital at each Station.

Each Station admits of comparison by contrasting the radii - not the area of the Sectors.

The central Sectors show admissions into Hospital from Venereal disease.

Nº VII.
 DIAGRAM SHOWING THE DEATHS IN HOSPITAL
 PER MILE AT THE PRINCIPAL STATIONS
 DURING 1866.



SECTION III.

GAOL POPULATION.

439. The statistical results shown in this portion of the report are compiled from information furnished to me by the Inspector General of Gaols. The returns are to a certain extent not so complete as it is desirable they should be, and it is to be regretted that during past years the information furnished relates to the official and not to the calendar year. Gaol statistics.

I trust that in future the calendar year will be the period of time adopted for the medical returns of gaols, as it does not appear either necessary or convenient that the medical returns should be made for the financial year.

It is also necessary that a set of statistical forms, specially adapted for gaols, should be adopted in this Presidency.

It is my intention in communication with the Inspector General, medical department, and the Inspector General of Gaols, to propose to Government a new arrangement by which our knowledge of the vital statistics of our gaol population may be rendered more perfect than it is at present.

440. During the year 1866, the average daily number of prisoners in gaols throughout the Madras Presidency, has been 9,457, and the total fluctuating population which has passed through the gaol during the year 1866, has been 31,262.* Average number of prisoners in gaol.

The following table shows the average daily strength of prisoners in gaol for the past five years :—

	1861-62.	1862-63.	1863-64.	1864-65.	1865-†	Average.	1866.
Average Daily Strength -	6,687	7,557	7,51	7,855	8,350	7,620	9,457

It will therefore be observed from this return, that the average daily strength of prisoners in gaols has increased on the above average by 1,837 men. On that of last year (when it was 8,350 for the calendar year) there has been a decrease of 1,107.

This steady increase in the gaol population of this Presidency is scarcely to be regretted in a moral point of view, inasmuch as it is fairly attributable to the greater activity of the new police force in the detection of crime.

The large increase in the year under report is owing to the high prices which have prevailed, and to scarcity caused in some districts by the failure of rain. This occasioned a large portion of the hired agricultural labourers to be thrown out of work, and to a large increase in crime against property.

441. During the year 1866 there have been 11,819 men admitted into the hospital, and the average daily sick have been 422·1. Sickness.

442. The total number of deaths which has occurred has amounted to 1,178. Mortality.

443. The following Table shows the rates of sickness and mortality in the gaols of this Presidency for 1866, contrasted with those of previous periods :— Contrast with former years.

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865-†	Average of Five Years.	1866.
Admissions - - - -	1502·6	1319·0	1373·6	1491·1	1290·6	1391·5	1249·7
Deaths - - - -	93·0	89·4	107·6	101·5	126·3	109·5	124·5

Judging from the foregoing Table, it would appear that the sickness in gaols during the past year as compared with the average of five years has decreased, while

* This number has been arrived at by adding together the number of prisoners admitted during 1866 and those remaining on the 1st January.

† The return for the official year furnished by the inspectors of gaols is so incomplete, that the calendar year is here given.

while the rate of mortality has increased by about 20 per 1,000 of average daily strength.

It is to be observed that from 1861 to 1864 there was a steady decrease in the sickness, after which period it again rose.

The lowest rate of mortality occurred in 1862-63, while the highest is shown in the two years 1865 and 1866 which have just passed.

Contrasting the year 1866 with that of 1865 it is seen, that both as regards sickness and mortality, the past year bears a slightly favourable comparison.

Comparison with
other Presidencies.

444. The following statements show the sickness and mortality in the gaols of Bengal and Bombay :—

BENGAL.*

Rate per Mille of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admissions - - - -	1336·4	1491·8	1314·2	1346·1	1368·8	1227·3	1154·0
Daily sick - - - -	52·9	57·4	48·3	46·6	48·8	41·2	35·4
Deaths - - - -	82·7	110·8	96·6	66·7	85·8	70·1	57·6
Average Strength - - -	46,733	46,348	50,915	52,871	52,401	52,598	54,337

BOMBAY.†

Rate per Mille of Strength.	1862.	1863.	1864.	1865.
Admissions - - - - -	1592·6	2591·8	- -	1491·0
Daily Sick - - - - -	48·2	66·2	- -	52·0
Deaths - - - - -	60·4	50·2	- -	69·5
Average Strength - - -	4,498	5,010	- -	7,019

As shown above, the mortality in gaols in this Presidency is 124·5 per mille.

It might be thought that the great difference in the rate of mortality in Bengal and Madras might be accounted for by the larger average strength of the Bengal Presidency, but such is not the case, as the same favourable rate of mortality exists when the statistics of this Presidency are compared with the different groups of gaols in Bengal proper; Dinapore, Benares and Oude; Central India, Punjaub, &c., &c.

From this it will be seen that the rate of sickness in the gaols of all three Presidencies is much alike, but with respect to the death rate, that of the Madras Presidency contrasts most unfavourably with the other two.

The mortality in the Madras gaols is rather more than 20 per mille greater than in the Bengal gaols, and still greater than in those of Bombay.

Causes of high
rate of gaol mor-
tality in Madras.

445. It is not easy at once to account for these different rates of mortality in the gaol population of the Presidencies, without a better knowledge of the difference in the class of prisoners confined, and of the conditions under which they are lodged.

From different inspections I have made, it cannot be doubted that the sanitary condition of the gaols of this Presidency is extremely bad in the majority of instances as regards overcrowding and ventilation, and that in this respect, our gaols are very inferior to those in other Presidencies.

It may, however, be confidently expected that the active measures which are now being taken to remedy these defects by building large central gaols and improving existing gaols, will soon remove this reproach to our gaol administration.

Comparative sick-
ness and mortality
in gaols.

446. An examination of Table IV., page 207, of the Appendix, shows the comparative salubrity of the different gaols of this Presidency.

For

* Taken from the Bengal Sanitary Commissioner's Report for 1865.

† The Returns for 1862 and 1864 are taken from the Report of the Inspector General of Prisons in Bombay for 1864, and for 1865 from the Report of the Bombay Sanitary Commission. The Returns for 1864 are not at my disposal.

For the sake of fairer comparison, they have been divided into three separate classes according to their average strength.

In looking over the list, it appears that the admission rate ranges from 219·2 per mille in the Cannanore gaol to 4055·5 per mille in the gaol at Russelcondah.

The average strength of the Guntoor gaol has been 211 during 1866, and has been one of the healthiest in the whole presidency, not only as to sickness, but as to its rate of mortality, which is only 9·4 per mille.

The gaol at Russelcondah has only had an average strength of 90, which, it is unnecessary again to state, is too small for any comparative statistical deductions.

Nineteen of its admissions and eight of its deaths have been from cholera.

The greatest mortality is in the gaols of Berhampore and Tellicherry, where it has been at the frightful rate of 460·9 and 783·9 per mille respectively.

447. As regards Berhampore, the whole of the Ganjam district was exposed to the sufferings of famine, and many of the prisoners were admitted in a condition of approaching starvation, and were also at times much overcrowded in this gaol, as the following extract from the report of the medical officer in charge of the gaol shows:—

Sickness in the Berhampore gaol.

“The gaol was overcrowded very much, and the criminals brought in were many of them in a semi-state of starvation, some brought upon carts to the gaol gate; many have been known to have committed theft in order to get into the gaol to keep themselves alive. Such a state of distress and starvation has never before been known in the district since 1824 and 1836. The gaol, calculated to hold 168 prisoners, or, at a pinch, 200, contained at one time over 680 prisoners; of these, many had to be huddled outside the gaol in sheds; but for months the gaol contained often more than double the legitimate number, according to regulation.”

448. With reference to the Tellicherry gaol, the following is extracted from the annual report by the native surgeon in charge of the gaols, for the official year 1866-67:—

Sickness in the Tellicherry gaol.

“Para. 6. The general health of the prisoners does not appear to have been good during the bygone year. The facility with which numbers fell victims to the prevailing diseases shows a predisposition to take on disease. The mortality has been unusually high. In comparing the present annual returns with those of the preceding years, there appears a progressive increase of mortality in the gaol from 1863-64. Another thing very remarkable is, that it has been chiefly occasioned by bowel complaints.

“The following is a concise Table showing the admissions and deaths from bowel and other complaints, with total admissions and deaths for each year from 1863-64.

Y E A R S.	Average Annual Strength of Prisoners.	Under Bowel Complaints.		Under other Diseases.		Total Admissions.	Total Deaths.	Deaths per Cent. to Total Admitted.
		Admitted.	Died.	Admitted.	Died.			
1863-64 - - - - -	141	81	7	222	11	303	18	5·9
1864-65 - - - - -	154	118	21	198	14	316	35	11·0
1865-66 - - - - -	163	170	47	175	17	345	64	18·5
1866-67 (11 months) - - -	172	170	76	154	23	324	104	31·7

N.B.—This Table relates to the official year. The average strength and returns of sickness and mortality therefore differ to a certain extent from those furnished by the Inspector General of Gaols, as shown in the Appendix to this Report.

“From the above Table it will be seen that, with the increase of cases of bowel complaints, mortality began to increase; and in the year under report it was further augmented by an outbreak of epidemic cholera, which was so virulent in its nature that it carried off nearly every person attacked. Indeed, the prompt removal

removal of the prisoners from the unhealthy gaol and their encampment at a place (Dhurmapatam) about three miles' distance from the town, seem alone to have arrested the progress of the fearful disease, and saved the others from a similar fate. This growing sickness and mortality from year to year can only be imputed (as I premised in the first part of this report) to the expanding evil resulting from the continued badly ventilated and unhealthy state of the cells in which the prisoners, heated and tried by labour during the day, were obliged to pass their comfortless nights.

"I am, however, glad to say that the improvements that have been lately made in the gaol will not fail to produce a beneficial effect on the health of prisoners; but how far this may be brought about remains to be seen.

"Para. 7. The diseases most prevalent during the year have already been pointed out. I beg here to annex the brief account left by Dr. Thompson of the prevalence of cholera, on relinquishing medical charge of the gaol.

"There were 211 admissions into hospital; of these, 85 have died; 34 from diarrhœa, and 30 from cholera.

"The cases of diarrhœa were of an epidemic character (gaol diarrhœa), and arose principally from the unhealthy and badly ventilated state of the gaol, as is shown in my letters to the Deputy Inspector General of Gaols.

"Cholera broke out on the 17th August; and had not the convicts been removed into camp, I feel convinced, from the rapid manner in which it was spreading amongst the convicts, and the fatal termination in almost every case that was attacked, that every convict in the gaol would have died. The gaol is now under repair, and I would recommend that the prisoners be kept in camp until it is thoroughly ventilated.

"In short, all the deaths, with a few exceptions, resulted from the sedative effects of an entire want of ventilation in the sleeping cells of the men. This state I pointed out most strongly when I first arrived in this station, and from time to time afterwards described the growing evils from it.

"Para. 8. During the six months I have been in medical charge of the gaol, there were 101 admissions, and 16 deaths. The mortality was almost exclusively occasioned by diarrhœa and dysentery. The prisoners are now beginning to look healthy and improved in appearance."

Comparative sickness of gaols whose strength has been over 300.

449. The first group contains 13 gaols, whose average daily strength ranges from 727 at Bellary to 305 at Calicut.

Of these, Bellary stands first on the list as regards its admissions and daily sick rate, which is 599·7 and 21·3 per mille respectively; but it stands low (ninth) as regards its death-rate, which is 111·4 per mille.

The severe distress which has prevailed during the year under report in this district, may account for this high death-rate, the prisoners in many cases being in a state of weakness very unfavourable to resisting disease of any kind.

Vizagapatam gaol has the highest admission rate, viz., 2,243·7 per mille, and a death-rate of 303·5.

Cuddapah is last but one on the list as to its admission rate (1,595·7), and last as regards its daily sick (67·8) per mille; the death-rate is also high, viz., 130·3 per mille.

Berhampore has the greatest mortality, standing at the extraordinary high rate of 460·9 per mille; the causes of this high rate of mortality have been explained above.

Under this group, the admission rate of half the gaols is under 1000 of average strength. The daily sick varies from 21 to 67, and the death-rate of six varies from 50 to 82 per mille; of five, from 104 to 180; the remaining two are 303 and 460 per mille respectively.

Comparative sickness of gaols whose strength is over 200.

450. Eight gaols are classed under this group whose average strength varies from 283 at Mangalore to 211 at Guntoor.

Guntoor has been before remarked as being one of the healthiest gaols in the Presidency.

Mangalore and Tranquebar stand the lowest in this group, both as regards admissions and daily sick. At the former place the admissions per mille have been 2837·4. The death-rate, however, of these two gaols is not high comparatively, viz., 59·9 per mille at Tranquebar, and 81·2 per mille at Mangalore.

The gaol at Chingleput must be considered the most unhealthy of this group of gaols, its admission rate being 1814·4 per mille, and its death-rate 116·3 per mille.

In this group there is one whose death-rate is under 1,000 admissions per mille,

mille, of strength. Five range from 1149·8 to 1814·6 per mille, and the remaining two are 2188 and 2837·4 per mille.

The daily average sick of this group ranges from 26·5 at Gunttoor to 79 at Tranquebar.

One of the gaols in this group has a mortality rate as low as 9·4 per mille (Gunttoor). Four are from 59·9 to 93·6 per mille, and three from 103·0 to 116·3.

451. There are 15 gaols in this group whose average strength varies from 197 per mille at Vellore, to eight at the European prison at Ootacamund.

Comparative sickness of gaols whose average strength is under 200.

The admission rates vary from 219·2 per mille at Cannanore to 4055·5 at Russelcondah.

At two gaols, no deaths occurred, viz., the European prison at Ootacamund, on the Neilgherry Hills, and the gang of convicts at the Dodabett Chinchona plantation.

The lowest rate of mortality where deaths have occurred is at the Guindy gaol, where the deaths are at the rate of 12 per mille, while the highest mortality in the group has been at Tellicherry where, as before mentioned, the rate has been 783·9 per mille.

Of the gaols in this group, there are six whose admission rate varies from 219·2 to 869·3 per mille, four ranging from 1036·1 to 1425·3, and four from 2262·1 to 2565·1. The last has been named above, Russelcondah, whose admission rate is 4055·5 per mille.

The daily sick ranges from 10·6 at Vellore to 86·4 per mille at Tellicherry.

Except in two gaols on the Neilgherry Hills, in which no deaths occurred, the mortality rate in nine of this group ranges from 12 to 81·8. Three have a death-rate ranging from 172·6 to 288·8 per mille, while the last one (Tellicherry), as has been stated above, has a death rate of 783·9 per mille.

452. The following Table shows the rates of sickness and mortality per thousand of strength of some of the principal gaols, contrasted with a period of five previous years. The remainder may be contrasted by a reference to Tables IV. and VII., Appendix, pages 207 and 210.

Health of gaols contrasted with previous periods.

GAOLS.	1866.		Average of Five previous Years.		GAOLS.	1866.		Average of Five previous Years.	
	Admissions.	Deaths.	Admissions.	Deaths.		Admissions.	Deaths.	Admissions.	Deaths.
Bellary - -	599·7	111·4	808·2	65·3	Coimbatore -	1253·1	58·5	1388·0	168·9
Trichinopoly -	801·8	72·0	1444·3	77·8	Berhampore -	1282·1	460·9	1112·2	143·7
Calicut - -	855·7	180·3	1530·3	297·8	Kurnool - -	1481·4	111·1	1315·8	64·3
Cuddalore - -	906·6	82·2	1444·3	77·8	Cuddapah -	1595·7	130·3	935·2	55·0
Salem - - -	1085·0	58·5	1142·1	94·7	Vizagapatam -	2243·7	303·5	1651·7	81·0

A glance at the above Table shows us the very unsatisfactory sanitary condition of the gaol population, and is a very fair sample of the whole. Out of the above 10 large gaols, the rate of admission into hospital, compared with the average of five previous years, is less in six instances, while on the other hand the mortality is much greater in the same number of cases.

453. During the year there have been 451 admissions and 242 deaths, which must be considered a high rate of mortality to admissions.

Sickness and mortality from cholera.

454. The following Table shows the rate of mortality from this disease contrasted with former periods:—

Prevalence of, in former years.

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average of Five Years.	1866.
Admissions - - - -	48·1	41·2	31·8	41·7	61·5	45·1	47·6
Deaths - - - - -	26·3	23·0	15·6	21·3	30·0	23·3	25·5

From this it will be seen that cholera has not prevailed in gaols during 1866 to a much greater extent than usual, but that such a high rate of mortality per

thousand from this cause should occur is a proof of the insanitary condition to which the prisoners are subject.

The gaols at which cholera has been most prevalent during the year 1866 will be seen by an inspection of Tables II. and III., pages 205 and 206 of the Appendix.

Comparative prevalence of, in gaols.

455. The following is a statement of a few of those which have suffered most severely during 1866:—

GAOLS.	Admissions.	Deaths.	Rate per Mille.		GAOLS.	Admissions.	Deaths.	Rate per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Salem - -	22	9	30·6	12·5	Madura - -	21	10	95·0	45·2
Chittoor - -	27	15	60·0	33·3	Vellore - -	10	8	50·7	40·6
Cuddalore - -	32	15	71·1	33·3	Tellicherry - -	42	32	259·2	197·5
Berhampore - -	41	23	103·2	57·9	Rajahmundry District Gaol.	12	5	116·5	48·5
Cuddapah - -	54	26	143·6	69·1	Russelcondah -	19	8	211·1	88·8
Vizagapatam - -	88	54	238·4	146·3					
Chingleput - -	27	13	116·3	56·0					

From this it is seen, that the greatest rate of mortality has occurred from this disease at the Tellicherry, Vizagapatam and Russelcondah gaols.

Outbreak of cholera in Vellore gaol.

456. I was on inspection duty at Vellore at the time cholera broke out in this gaol. The following extract from my report on the gaol at this station speaks for itself as to the cause of the outbreak.

“The room* on the west, occupied as a sleeping apartment by prisoners is 32'×31'×12', containing a superficial area of 992 square feet and 11,904 cubic feet. The only ventilation is by means of four small windows, two of which open into the passage leading into the prison.

“From its dimensions this room is only calculated to hold 18 prisoners. at the rate of 648 cubic feet of breathing space per man, which would give each a superficial area of 55 square feet.

“N. B.—If the prisoners were allotted at the rate of 36 feet per man, from the lowness of the walls they would only get 440 cubic feet of breathing space.

“At the time of my visit there were 38 prisoners sleeping in it, so that each man had only 26 feet superficial, and 313 cubic feet of space.

“The air of this room, which was visited an hour after it had been vacated, was insufferably hot and close, and the contaminated atmosphere had such a sickening influence, as to render a stay in this apartment impossible.”

I am glad to be able to record that this building has now been vacated, and that the prisoners at Vellore have, at my suggestion, been transferred to the old European Barracks in the Fort at Vellore.

The mortality at the Tellicherry Gaol is especially alluded to in another portion of this Report.

The only gaols in this Presidency where there was no admission from cholera during 1866, were those of the Coimbatore District gaol, Nellore, Tranquebar, Guntoor, Paumben, Ootacamund, Neddivuttum, Palghaut, Cochin, and amongst the gangs employed at the Lawrence Asylum Works and Dodabett Chinchona Plantations.

Contrast between Madras gaols and those of other Presidencies.

457. The death rate from cholera in the gaols of this Presidency is excessively high when compared with that of other presidencies. As has been stated above, the average death rate from this cause alone has been 23·3 per mille for the five years preceding 1866, and 25·5 for the last year, which was not characterized as one during which this disease was at all prevalent in our European or Native Army.

In Bengal the death-rate was 8·56 per mille in 1864 and 7·19 in 1865, while in Bombay it was 10·7 per mille in 1862, 4 per mille in 1863, when only two deaths occurred, and 9·4 per mille in 1865.

The contrasts are so striking and speak so plainly for themselves as to render any additional comment unnecessary.

Sickness and mortality from small-pox.

458. During the year 107 admissions and 17 deaths have taken place from small-pox.

459. The

* Since the above was written, a severe outbreak of cholera has taken place in this gaol, and out of eight deaths which have occurred up to date (September 1st), seven have been amongst the prisoners sleeping in this room.

459. The rate of prevalence of this disease amongst our gaol population, as compared with previous periods, is to be seen in the following Table :—

Prevalence of, in former years.

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average.	1866.
Admissions - - - -	6·7	9·3	24·5	9·6	7·5	11·6	11·3
Deaths - - - - -	·4	1·7	3·2	·5	·1	1·2	1·7

From this it will be seen that small-pox has not been for some time past a very fatal disease in our gaols. The largest number of admissions appear to have taken place in 1863-64. This was due to an outbreak at the Calicut Gaol, when 130 prisoners were admitted, out of which 25 deaths occurred.

460. In the Bengal Presidency, the admissions and deaths from this disease in 1865 were 4·1 and ·42 per mille respectively; while in Bombay, for the same period, there were no fatal cases.

Contrast with other Presidencies.

461. The following Table shows the principal gaols where this disease prevailed during 1866:—

Comparative prevalence of, in gaols.

GAOLS.	Admissions.	Deaths.	GAOLS.	Admissions.	Deaths.
Berhampore - - - -	10	3	Coimbatore District Gaol - -	5	-
Vizagapatam - - - -	8	3	Tanjore - - - - -	11	-
Lawrence Asylum Works - -	18	-	Rajahmundry District Gaol -	11	3
Mangalore - - - - -	5	3	Russelcondah - - - - -	22	4

The largest number of admissions and deaths, it will be seen, has taken place at the Russelcondah Gaol during the year. A comparatively large number of cases is recorded amongst the prisoners employed at the Lawrence Asylum Works, but no deaths occurred.

462. During the year, there were 2,957 admissions into hospital under the head of fevers, of which number 49 were fatal.

Sickness and mortality from fevers.

463. The following statement shows the rate of prevalence of these diseases for the past year, as contrasted with previous periods :—

Prevalence of, in former years.

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average.	1866.
Admissions - - - - -	308·3	356·2	315·7	341·1	316·2	327·8	274·6
Deaths - - - - -	5·3	3·1	5·3	4·5	6·3	4·9	5·1

There has been an evident decrease amongst the admissions in our gaols from fevers during the year on that of past periods, while the death-rate remains very much the same.

464. In the Bengal gaols, the deaths from fevers stand at 12·71 per mille for 1865, and in Bombay, for the same period, at 22·9 per mille.

Contrast with other Presidencies.

465. The following Table shows the rates of admissions and deaths at some of the principal gaols of this Presidency for 1866 :—

Comparative prevalence of, in gaols.

GAOLS.	Admissions.	Deaths.	Rate per Mille.		GAOLS.	Admissions.	Deaths.	Rate per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Salem - - -	234	5	326·3	6·9	Coimbatore District Gaol.	49	2	176·2	7·1
Rajahmundry -	125	5	259·8	10·3	Tranquebar -	139	-	520·5	-
Cuddapah - -	193	4	513·2	10·6	Tanjore - - -	21	6	125·0	35·7
Vizagapatam -	142	4	384·8	10·8	Tellicherry -	65	6	401·2	37·0
Kurnool - - -	166	3	472·9	8·5	Palghaut - - -	26	1	371·4	14·2
Calicut - - -	23	2	75·4	6·5					
Mangalore - -	347	1	1226·1	3·5					

From this it is to be observed, that the greatest rate of admissions has occurred at the Mangalore Gaol from fevers, and the greatest mortality at Tellicherry and Tanjore. At Kurnool the admissions were numerous. At Calicut, considering the few admissions, the rate of mortality is high.

At Rajahmundry, Vizagapatam, and Cuddapah the mortality is high.

The Bellary, Chittoor, and Berhampore Gaols have a very low admission rate from fevers.

Sickness and mortality from dysentery.

466. The total admissions from dysentery, a disease aggravated by overcrowding and want of ventilation, during the year 1866, have been 1,210, and the mortality 136.

Prevalence of, in former years.

467. The following statement shows the rate of prevalence of this disease during the past year, as contrasted with previous periods:—

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average.	1866.
Admissions - - - -	78·0	83·2	113·0	127·3	117·8	104·9	127·9
Deaths - - - -	8·5	7·2	16·5	18·2	12·8	12·8	14·3

Judging from the Table, there appears to have been a gradual increase in the rates of admissions and deaths of late years from this disease. A greater rate of admissions has occurred during the past year from this disease than at any previous period, although the death-rate is not quite so high as it was during the years 1863 and 1864.

Contrast with gaols of other Presidencies.

468. For the Bengal gaols, the rate of admissions was 99·5 per mille of strength, and the deaths 11·52.

In Bombay the death-rate per mille was 5·5 in 1862, in 1863, 5·9, and in 1865, 5·4. All these rates bear a most favourable comparison with those of the Madras gaols.

Comparative prevalence of, in gaols.

469. The following Table shows those gaols in which this disease has been most prevalent during the past year:—

GAOLS.	Admissions.	Deaths.	Rate per Mille.		GAOLS.	Admissions.	Deaths.	Rate per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Rajahmundry					Kurnool - -	89	13	253·5	37·0
Central Gaol.	62	4	128·8	8·5	Lawrence Asylum	64	8	190·4	23·8
Coimbatore -	60	4	125·5	8·3	Works.				
Cuddalore -	56	3	124·4	6·6	Trichinopoly -	70	2	210·2	6·0
Berhampore -	82	29	206·5	73·0	Tellicherry -	45	4	277·7	24·6
Cuddapah -	79	3	210·1	7·9	Rajahmundry	21	-	203·8	-
Vizagapatam	131	7	355·0	18·9	District Gaol.				
					Russelcondah -	57	9	633·3	100·0

The greatest rate of sickness from this disease has occurred at the Russelcondah, Vizagapatam, Tellicherry, and Kurnool gaols; while the greatest mortality took place at Berhampore, Rajahmundry district, and Kurnool gaols.

Sickness and mortality from diarrhoea.

470. The admissions from diarrhoea amongst the gaol population of this Presidency have amounted to 1,717, of which number 328 were fatal cases. The deaths from this particular disease, it may be here stated, are greater than any other special disease which receives a separate notice in this portion of the Report.

Prevalence of, in former years.

471. The following Table shows the rate of prevalence of this disease during the past year, contrasted with previous periods:—

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average.	1866.
Admissions - - - -	143·7	111·8	113·4	166·5	147·4	140·9	181·5
Deaths - - - -	14·6	14·5	17·5	30·9	22·7	20·3	34·6

The rates of admissions and mortality are very high during the past year, the latter being greater than any other year under review.

The

The year 1864-5 approaches nearer to the rates of the present year than any other, owing to the fatality from this disease in the gaols of Trichinopoly, Coimbatore, Calicut, and the gangs at the Lawrence Asylum Works.

472. In Bengal, the rates of admissions and deaths from this disease for 1865 was 115.1 and 11.69 per mille respectively; and in Bombay, for the same period, the death rate was 15.8. Contrast with other Presidencies.

Madras gaols again contrast unfavourably with the other Presidencies in this, the most fatal disease of prisons.

473. The following Table shows those gaols where this disease has been most prevalent during 1866 :— Comparative prevalence of, in gaols.

GAOLS.	Admissions.	Deaths.	Rate per Mille.		GAOLS.	Admissions.	Deaths.	Rate per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Coimbatore -	87	5	182.0	10.4	Nellore -	83	20	310.8	74.9
Berhampore -	233	98	586.9	246.5	Tranquebar -	85	3	318.3	11.2
Vizagapatam -	56	11	151.7	29.8	Tinnevely -	83	15	314.0	56.8
Trichinopoly -	71	12	213.2	36.0	Chingleput -	58	1	250.0	4.3
Mangalore -	85	5	300.3	17.6	Tellicherry -	126	53	777.7	327.1
Coimbatore District Gaol.	50	11	179.8	39.5	Russelcondah -	51	3	566.6	33.3

The enormous admission and death-rate from diarrhoea at Berhampore is almost startling; the causes of this are noticed more in detail in another portion of this Report.

It will be observed, that the rate of mortality from this disease is very high at the Vizagapatam, Trichinopoly, Nellore, Tinnevely, and Coimbatore district gaols.

474. The admissions from phthisis have amounted to 291, out of which number 42 were fatal cases. Sickness and mortality from phthisis.

475. The rate of prevalence of this disease in the gaols of this Presidency, contrasted with former years, will be seen from the following Table :— Prevalence of, in former years.

Rate per Mille of Strength.	1861-62.	1862-63.	1863-64.	1864-65.	1865.	Average.	1866.
Admissions - - - -	26.1	35.5	28.4	32.9	37.3	32.3	30.7
Deaths - - - -	2.5	4.2	5.0	3.6	5.5	4.2	4.4

The rate of prevalence of this disease, it appears, has not differed much during the past year from the previous years under review.

476. It is, however, a larger rate than that which prevailed during 1865 in the Bengal and Bombay gaols, where, in the former Presidency, the admissions and deaths were 2.1 and 1.3 per mille, and in the latter, the deaths were as low as .2 per mille. Contrast with other Presidencies.

477. The following Table shows the gaols in this Presidency, where the greatest rates of admissions and deaths from this disease occurred during 1866 :— Comparative prevalence of, in gaols.

GAOLS.	Admissions.	Deaths.	Rate per Mille.		GAOLS.	Admissions.	Deaths.	Rate per Mille.	
			Admissions.	Deaths.				Admissions.	Deaths.
Bellary -	16	10	22.0	13.7	Madura -	12	-	54.2	—
Cuddapah -	6	4	15.9	10.6	Paumben -	9	1	50.5	5.6
Vizagapatam -	15	1	40.6	2.7	Russelcondah -	10	-	111.1	—
Lawrence Asylum Works.	33	5	98.2	14.8	Dodabett Chinchona Plantation.	8	-	105.2	—
Mangalore -	41	1	144.8	3.5	Palghaut -	8	-	114.2	—

It will be observed that the greatest number of admissions occurred in the Mangalore gaol; but the rate of deaths is very low, only one fatal case having occurred.

The greatest mortality occurred in the Lawrence Asylum gang, Bellary, and Cuddapah.

In 19 gaols, no deaths occurred from this disease.

Sickness and mortality in Bangalore central gaol.

478. The following Returns, supplied by the superintendent of the central gaol at Bangalore, show the sickness and mortality.

The new gaol is built on the radial principle, and was only opened for the reception of prisoners in August 1864.

It will be observed from these Returns that the sickness and mortality in this gaol are less than those situated in other parts of the Madras Presidency.

Years.	Total Gaol Population.	Average Daily Strength.	Admissions from all Causes.	Average Daily Sick.	Deaths from all Causes.	Cholera.		Small-Pox.		Fevers.		Dysentery.		Diarrhoea.		Phthisis.		Other Diseases.	
						A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
1865 - -	1,747	901	665	30·0	42	1	1	-	-	157	4	57	10	50	5	2	2	398	20
1866 - -	2,483	1,021	904	32·0	50	-	-	3	-	193	9	68	11	78	9	1	1	561	20
Ratio per Mille to Strength.																			
1865 - - - - -			738·0	33·2	46·6	1·1	1·1	-	-	174·2	4·4	63·2	11·0	55·4	5·5	2·2	2·2	441·7	22·1
1866 - - - - -			885·8	31·3	48·9	-	-	2·9	-	189·0	8·8	66·6	10·7	76·3	8·8	0·9	0·9	549·4	19·5

Medical returns of civil police.

479. The following returns, received from the Deputy Inspector General of Police, show the sickness and mortality amongst the men employed in the Mofussil Police:—

Ranges.	DISTRICTS.	Average Strength.	Number of Men Treated in Hospital.	Total Deaths.	Ratio per Mille to Strength.	
					Admissions.	Deaths.
Northern Range -	Ganjam - - -	1,458	1,705	73	1169·4	50·0
	Vizagapatam - - -	1,604	448	73	279·3	45·5
	Jeypore - - -	382	297	7	894·5	21·0
	Godavery - - -	1,401	668	54	476·8	38·5
	Krishna - - -	1,397	372	30	266·2	21·4
	TOTAL - -	6,192	3,490	237	563·6	38·2
Central Range -	Nellore - - -	1,364	631	20	462·6	14·6
	Kurnool - - -	1,078	1,010	24	936·9	22·2
	Bellary - - -	1,425	265	30	185·9	21·0
	Cuddapah - - -	1,204	402	20	333·8	16·6
	North Arcot - - -	1,333	353	22	264·8	16·5
	Madras - - -	918	106	15	115·4	16·3
	TOTAL - -	7,322	2,767	131	377·9	17·8
Southern Range -	South Arcot - - -	1,181	298	12	252·3	10·1
	Tanjore - - -	1,412	502	15	355·5	10·6
	Trichinopoly - - -	718	110	11	153·2	15·3
	Madura - - -	1,285	134	30	104·2	23·3
	Tinnevely - - -	1,067	323	9	302·7	8·4
	TOTAL - -	5,663	1,367	77	241·3	13·5
Western Range -	Salem - - -	1,188	558	17	469·6	14·3
	Coimbatore - - -	1,159	1,190	24	1026·7	20·7
	North Malabar - - -	547	186	9	340·0	16·4
	South Malabar - - -	957	403	23	421·1	25·0
	South Canara - - -	741	183	7	246·9	9·4
	TOTAL - -	4,592	2,520	80	548·7	17·4
GRAND TOTAL - -		23,769	10,144	525	426·7	22·0

480. The following Table shows the sickness and mortality in the police employed in the town of Madras : Madras town police.

	Strength.	Deaths.	Deaths per Mille.
Foot Police - - -	791	9	11·3
Mounted ditto - - -	50	1	20·0
Marine ditto - - -	152	5	32·8

The admissions in hospital during 1866 are not shown, as the men of this force were not treated as in-patients, an arrangement which has undergone some alterations during the present year.

481. During the year, committees, of which I was a member, were assembled for the selection of sites for central gaols at Vellore and Trichinopoly. Selection of sites for gaols.

At my suggestion, it was proposed that, having in view the great heat which prevails at Trichinopoly during some months of the year, the standard plan for gaols should be modified by placing the several blocks in *echelon* rather than radiating from a central tower, in order to secure as complete perfilation of air as possible in the wards.

According to the standard plan, all the wards are not equally accessible to the prevailing winds, whereas the location of the wards in *echelon* would secure each ward being equally favoured in this respect.

This suggestion was not adopted by Government, on account of the delay and increased cost which would probably have been involved.

482. While passing through certain districts of this Presidency on special duty, I became aware that advantage was not being taken of the liberal permission accorded by Government for improving the condition of prisoners under short periods of confinement. Overcrowding of district subsidiary gaols.

I pointed out the fact that the number of prisoners annually incarcerated in subsidiary gaols for an average period of 10 days and not more than a month was more than 15,000, but the number of those arrested and confined in the lock-ups through the country while under trial by the subordinate magistracy, was estimated as amounting to 50,000.

For this number of prisoners the accommodation provided is totally inadequate.

It is true that these persons are only a short time in confinement, but it is a well-established fact that the health of prisoners suffers most while they are under trial, and during the commencement of their confinement in gaols after conviction.

Anxiety in the case of prisoners under trial, and a radical change in their mode of life in the case of convicted prisoners, have been given by competent authority as the causes of this increased susceptibility to disease.

If, in addition to this tendency to disease, be added overcrowding for days and nights in ill-ventilated places of confinement, we can hardly be surprised at the constant occurrence of fatal cases of cholera in the subsidiary gaols and lock-ups.

It is gratifying to state that immediate action is being taken by Government to remedy the evils which undoubtedly exist at present.

A committee, of which I am a member, is engaged in studying the requirements in every district of the Presidency.

Existing buildings have been already temporarily improved, and large additions will be made, so as to secure to this class of prisoners, as well as to those sentenced to long periods of imprisonment, airy and healthy places of confinement.

483. During the year, special inspection reports on the following gaols were forwarded Special inspections of gaols.

forwarded to Government, and will be found embodied in the volume of my monthly proceedings for the year under review.

Grand Gaol, at Madras.	Chittoor Gaol.
Justices' Gaol, Black Town.	Bellary Gaol.
Vellore Gaol.	

My suggestions for the sanitary improvement of these buildings have either been carried out, or arrangements are being made for placing the prisoners in confinement under better conditions, by hutting or temporarily occupying other buildings till permanent measures can be adopted.

SECTION IV.

GENERAL POPULATION.

Mortuary statistics of civil population. 484. The mortuary statistics of the civil population will be found in the Appendix to this Report ; but as this is the first year these returns have been collected and compiled, they must be looked upon as only an approximation to the truth. The distress which has prevailed in some of the principal districts, owing to the scarcity of rain, has also to a great extent interfered with the regularity with which the returns should have been collected and forwarded to my office.

Total deaths. 485. This is especially the case with that of the Ganjam district. The total population of the districts from which returns have been received is 21,844,694 ; out of which number 586,225 deaths have been recorded, or, in other words, the civil population have died at the rate of 26·8 per mille, or one death to 37 living. Of the total deaths 316,346 were males and 269,879 females, or for 117 deaths of males there were 100 of females. This difference in the mortality of the opposite sexes is high, when compared with that for England and Wales, which is 103 males for 100 females.

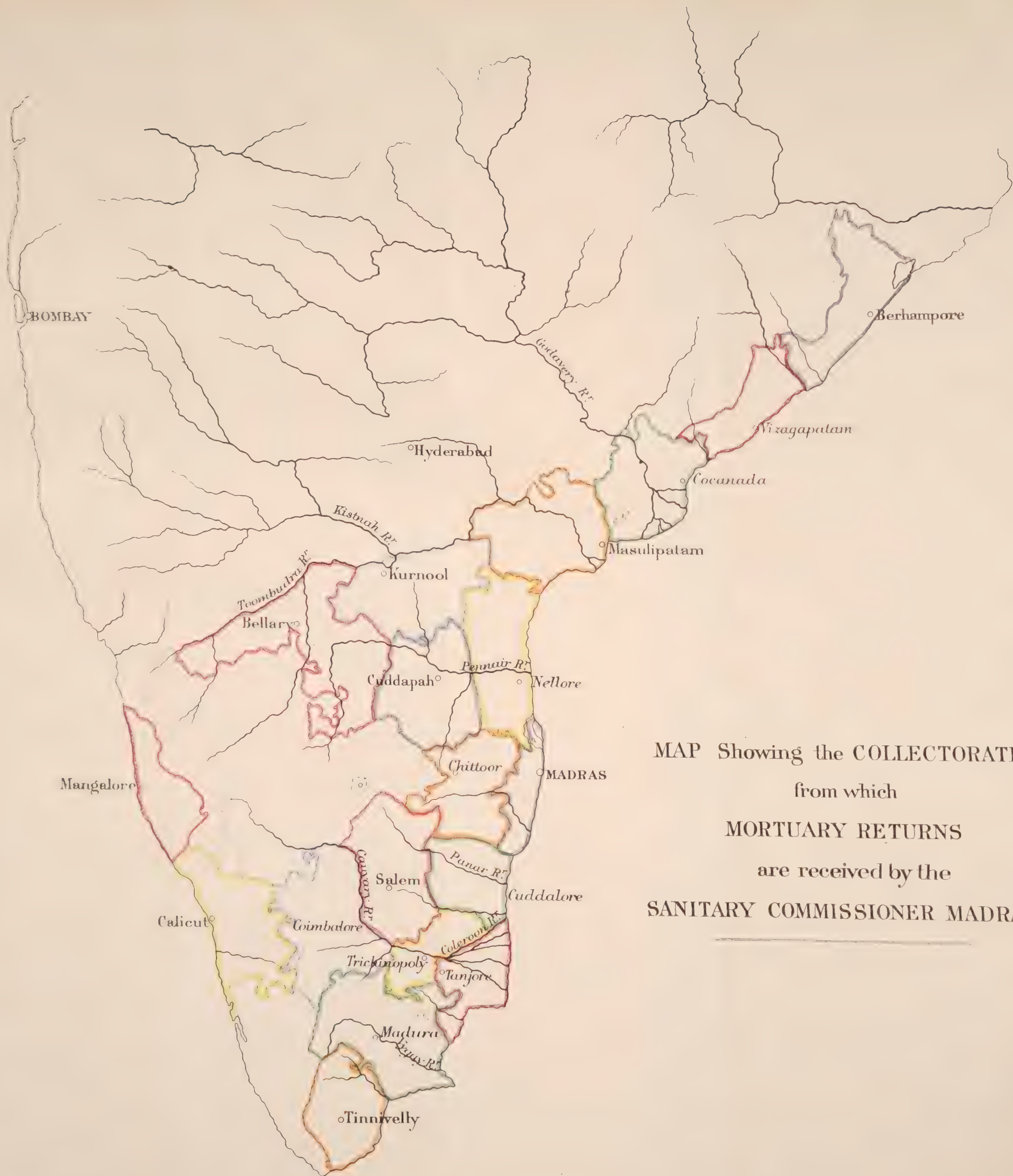
Rate of mortality contrasted with other countries. 486. The following Table, obtained from Dr. Parkes' work on Practical Hygiene, shows the above rates of mortality contrasted with those of England and other continental nations :—

	Ratio of Deaths to Living.	Rate per Mille of Population.
Civil population, Madras Presidency - - - -	1 in 37·2	26·8
England and Wales (average of 21 years, ending 1858 - - - - -	1 in 45	22·3
Scotland - - - - -	1 in 47	21·0
France - - - - -	1 in 42	23·97
Prussia - - - - -	1 in 38	26·58
Austria - - - - -	1 in 33	29·95
Russia - - - - -	1 in 28	35·90
Central Europe - - - - -	1 in 36	27·7

Cholera. 487. The total deaths from cholera have amounted to 197,977, or 9·06 per mille of the total population. The greatest mortality from this disease has occurred in the Ganjam and Bellary districts, but it can scarcely be doubted, that many of the deaths returned as cholera were nothing more than deaths from starvation, of which colliquative diarrhoea was the terminal symptom.

Small-pox. 488. The total deaths recorded from small-pox amount to 23,003, or at the rate of 1·5 per mille of the total population. This disease was very prevalent during the year in the districts of Ganjam, Godavery, Bellary, North Arcot, and Tanjore, also in Tinnevely and Salem.

489. The



MAP Showing the COLLECTORATES
from which
MORTUARY RETURNS
are received by the
SANITARY COMMISSIONER MADRAS.

489. The deaths returned from fevers, which doubtless include a vast number of diseases of which fever was only a symptom, amount to 107,846, or nearly 5 per mille. The greatest rate of mortality from this cause is in Bellary and Malabar. Fevers.

490. The deaths from age are recorded at 46,836. Age.

491. The total number of deaths from accidents amounts to 8,230, or three per mille. Of this number, deaths from drowning contribute 3,998, snake bites 1,890, and casualties from wild beasts 313; 2,029 are from other causes. The greatest number of deaths from the first cause occurred in Malabar and Madura; Cuddapah and North Arcot have also a large number. The largest number of deaths from snake bites took place in the Tanjore district. Accidents.

The deaths caused by wild beasts have been most frequent in South Canara and North Arcot.

492. The total number of suicides recorded amounts to 610; of these, 226 are by hanging, 303 by drowning, 28 by poisoning, and 53 by other means. A large number of suicides occurred in the Bellary district, of which 102 are recorded from drowning. Malabar and South Canara have also a large number. Suicides.

493. One hundred and forty-six deaths are recorded as having occurred from murder. Malabar and Bellary show the largest number. Murders.

494. The total population of this district is stated at 702,239, out of which number 38,862 died, or at the rate of 55·3 per mille; of these deaths, 15,549 are recorded to be from cholera, or at 22·1 per mille of population. As has been before remarked, a large number of these were cases of starvation. *Ganjam District.

495. The population of this zemindary is recorded to be 314,026, out of which 17,967, or 5·72 per mille, died. 29·8 are said to be from cholera. In both these districts cholera appears to have been most prevalent during the first part of the year. *Ganjam Zemindary.

496. The population of this district is recorded at 798,877, of which 29,205, or 36·5 per mille, of deaths occurred; of these 11,695, or 14·6 per mille, are from cholera. Vizagapatam District.

497. The population of this district is stated to be 779,902, out of which 21,758, or 27·8 per mille, of deaths occurred. The deaths from cholera are 7,560, or 9·6 per mille. Godavery District.

498. The population of this district is recorded at 549,724, of which 20,450, or 37·2 deaths per mille occurred. The deaths from cholera are shown to be 8,712, or 15·84 per mille. Godavery Zemindary.

499. This district has a population of 792,744, of which 24,069 deaths are registered, or at the rate of 30·3 per mille. The deaths from cholera are 5,591, or 7·05 per mille. Kistna District.

500. The population of the Nellore district is given at 613,899, out of which a total of 14,811 deaths are registered, at the rate of 22·4 per mille. Cholera contributes 1,884, or 3·06 deaths per mille. 474 cases of small-pox occurred. Nellore District.

501. The population of this zemindary is stated to be 365,838. The total deaths are 11,121, which gives a rate of mortality 30·3 per mille. The deaths from cholera are 3,790, or 10·3 per mille per annum. Nellore Zemindary.

502. The population of this district is laid down at 1,040,878, of which number 33,074 deaths are registered, these being at the rate of 31·7 per mille. The deaths from cholera are said to have amounted to 14,823, or 14·2 per mille. Cuddapah District.

503. The population of this district is stated to be 1,200,316. This district is one of those which suffered most severely from scarcity of rain during the past year; and consequently its inhabitants were exposed to great want and suffering. Bellary District.

* The population given in the returns of this district is very incomplete.

suffering from the failure of the crops. I have made a special report on the state of this district, which is noticed in this Section. The mortuary returns show a very high rate of disease. The total deaths amount to 50,285, which, calculated on the very imperfect census of the population, gives a rate of 41·8 per mille. Of this 22,833 are registered as having died of cholera, in other words, 19·02 per mille. Starvation must, however, enter largely into this rate as a cause of mortality.

Insanity through want of food is given as a cause of death in one instance.

The deaths from cholera appear to have reached a maximum during the months of August and September.

Kurnool District. 504. The population of this district amounts, according to the last census, to 718,865 of which number 21,401 persons are registered as having died. This number gives a death rate of 29·7 per mille.

The deaths from cholera are stated to be 7,685, or 10·6 per mille.

Madras District. 505. The population of this district appears to have been given very imperfectly as a reference to Table XIII., page 217 of the Appendix shows. It is estimated at 664,836, out of which number 22,869 deaths occurred, which gives a mortality rate of 34·3 per mille. The deaths from cholera amount to 9,294, or 13·9 per mille.

North Arcot District. 506. The population of this district, as shown from its return, is 1,069,685, of which 31,947 deaths are registered, thus giving a rate of 29·8 per mille. The deaths from cholera are stated to be 10,475, or 9·7 per mille.

This district was one of those which was stated to have suffered severely from loss of crops on account of indifferent rainfall.

South Arcot. 507. The population of this district is only shown for the last four months of the year, during which time the average number of persons amounted to 1,100,266. Of these, 27,191 deaths are registered, or at the rate of 24·7 per mille.

Cholera is stated to be the cause of death in 8,932 instances, or at the rate of 8·1 per mille.

Tanjore District. 508. The population of this district is shown to be 1,572,703, of which number 35,577 deaths are registered, or a mortality of 22·6 per mille.

Deaths from cholera contribute 8,978 to the total mortality, or 5·7 per mille of population.

Trichinopoly District. 509. The total population of this district is given at 835,887, out of which number 22,669 deaths are registered, thus giving a mortality rate of 27·1 per mille. Of these deaths 7,168 are said to be from cholera, or 8·5 per mille of the population.

Madura District. 510. The population of this district is shown to be 1,737,495 out of which number 21,513 deaths are registered, giving the very low mortality rate of 12·3 per mille. Cholera is registered as a fatal cause in 8,229 instances, or at the rate of 4·7 per mille.

Supposing these figures to be correct, this district has been the healthiest in the Presidency.

Ramnad Zemindary (Madura District). 511. The population of this zemindary, together with the five *Iyen* villages of Ramnad, is stated to be 491,883, amongst which 10,396 deaths from all causes have occurred. This number gives a mortality rate of 21·1 per mille.

The deaths from cholera amount to 3,772, or 7·6 per mille of population.

Tinnevelly District. 512. The population of this district amounts to 1,363,051, out of which number 21,349 deaths are registered, giving a rate of 15·6 per mille. The deaths from cholera are stated to be 3,186, or 2·3 per mille.

Next to Madura this district has been the most healthy of all the other districts. The number of deaths from cholera in this and the Malabar district is lower than in others.

Coimbatore District. 513. The population of this district, as shown by the last census, is said to be 1,209,740, of which number 25,142 deaths are registered, or at the rate of 20·7 per mille of population.

The deaths from cholera are 9,377 or 7·7 per mille.

514. The

514. The population of this district is shown to be 1,493,221 with a death registration of 32,308, giving a mortality rate of 21·6 per mille. Salem District.

The deaths from cholera are 12,593, or 8·4 per mille.

515. This district is stated to have a population of 781,767 persons, of which 16,817 died, giving a rate of 21·5 per mille of deaths to population. South Canara District.

The deaths from cholera are given at 2,429, or 3·1 per mille.

The population of this district is only shown for those villages from which returns have been actually received.

516. The population of this district is stated to be 1,716,852 with a total number of 35,444 deaths, which gives a mortality rate of 20·6. The deaths from cholera are said to be 4,042, which give a rate of mortality from this disease of 2·3 per mille. Malabar District.

517. A register of deaths occurring in the town of Madras has been kept up since the year 1855. The registration is of a very unsatisfactory kind, as will be seen from the following description of the plan adopted for obtaining the Mortuary Reports, which was submitted to the Government. Deaths in the town of Madras.

Although imperfect, a very fair approximation of the prevailing mortality is obtainable from the returns collected, which are submitted to Government each year in the form of an Annual Report.

“7. In March 1853, the Medical Board, while reporting upon the sanitary condition of Madras, pointed out to Government the necessity for establishing Returns of Births and Deaths in each division of the town. This measure, as regards Mortuary Returns, was brought into operation on the 1st January 1855, but it was considered impracticable at this time to obtain a return of Births.

“8. Up to the 31st December 1855, the duty of collecting the information regarding deaths rested entirely with the municipal and police authorities, this information being tabulated in the Office of the Principal Inspector General, and published annually.

“9. At the above time, however, the whole mortuary establishment was transferred to the Office of the Principal Inspector General, under whose entire control it remained till the 1st January 1866, when, in accordance with proceedings of Government, No. 819, dated 4th August 1865, it was removed to the Office of the Madras Sanitary Commission, where it now remains.

“10. The classification of diseases originally adopted in 1855, was that given in the Bombay Mortuary Returns, but in 1859 it was assimilated to that of the Registrar General of England in his annual and quarterly reports of mortality.

“11. In 1862, the system of classification was again altered to that approved and adopted at the Statistical Congress of Vienna in 1855, for the recording of diseases and mortality of all nations, and which had been introduced into the returns of the entire British and Indian army, and in the Civil Returns of the Madras Presidency.

“12. In 1860, weekly reports of deaths were published in the *Fort St. George Gazette*, and still later, in 1863, quarterly returns were furnished to Government, both of which are continued to the present time.

“13. The mortuary establishment attached to the Office of the Sanitary Commissioner, consists of one head writer and two clerks, with six men employed in collecting the reports of deaths as they occur in the different police divisions, and who bear the official designation of mortuary conicopies or accountants.

“14. The system which they adopt is as follows:—Each mortuary accountant makes a daily visit to the different Christian, Mahomedan, and Hindoo burial-grounds lying within the division of which he is in charge. The Vettyan (grave-digger or the burner of bodies) gives them, or, to speak more accurately, is supposed to give them, the number of persons who have been interred or burnt the day previous, with as much information as he possesses concerning the age, sex, occupation, and cause of death of the deceased. It often happens that the Vettyan, who was on duty the day previous, is absent at the time of the mortuary accountant's visit; the information is then obtained second-hand from some person who has been left in charge of the ground. If the Vettyan is unable to give the particulars connected with the deaths among Hindoos on the day following the interment, he obtains it from the friends of the deceased on a subsequent day (the second or third after the actual burial or burning), of funeral ceremonial known as the ‘Milk Day.’

"15. The Vettyan, it must be here mentioned, keeps no book or record of any sort, but all the information he gives is from memory.

"16. After visiting the burial-grounds, the next thing the mortuary accountant does, or is supposed to do, is to attempt to verify the statements of the Vettyan by the best means in his power. These are but limited. He first visits the police tannah nearest to the burial ground, and past which the funeral processions proceed, where, by an arrangement between the mortuary accountant and the police, the friends of the deceased deposit a writing, containing particulars concerning the deaths. In some instances, a pencil and slate or cadjan leaf is left at the tannah, upon which the friends record the information required for the Mortuary Register.

"17. But as there is no legal obligation, and consequently no order is in force by which the police can insist upon those conducting funerals furnishing this information, the entries at the police stations are very irregularly made.

"18. If the particulars concerning the deaths of the individuals agree with what the Vettyan has told the mortuary accountants, they are satisfied without further inquiry; but if discrepancies arise, they go to the house of the deceased for further information.

"19. Great difficulty often occurs in making this inquiry. The relations of the deceased very frequently refuse to give any information, and abuse the mortuary accountants.

"20. These attempts to check the information obtained at the burial-grounds, are obviously of a most unsatisfactory nature, and presuming that the information originally obtained from the Vettys is of the most untrustworthy character, it cannot be doubted that many errors are of constant occurrence amongst the entries made in the Mortuary Register.

"21. The difficulties with regard to the registration of native deaths are greater amongst the Hindoos than among the Mahomedans. The burial-grounds of the Mahomedans have constant watchers, and no one is buried without an order from the cauzee; but the entries of the causes of death are necessarily very inaccurate, both for the Hindoos and Mahomedans, as being supplied in almost all cases from verbal inquiries made by ignorant persons from those conducting the funeral ceremonies.

"22. With regard to the Christian burial-grounds, with one exception, there is less difficulty in checking the correctness of the reports brought in, as a register is kept at each, and a duplicate copy sent to this office at the end of the quarter. The mortuary accountant of the 1st and 3rd divisions complains of certain difficulties in getting reports from the Roman Catholic and Armenian burial-grounds in his division, from there being no one constantly present at these grounds, which renders it necessary to obtain the information from the neighbouring police tannah.

"23. Since the preparation of the mortuary returns for the town of Madras has been transferred to this office, I have made no alteration in the system hitherto pursued. I was aware that the Madras Municipal Act was about to undergo a revision, and I preferred continuing the existing system, which, though imperfect, is well understood by those engaged in the work of registration, and by the public, until legislative provision could be made for rendering registration of births and deaths compulsory, and also for taking a census of the population."

During the year 1866, the total number of deaths registered in the town of Madras amounted to 13,881; of these, 7,243 were males, and 6,638 females; that is, for 100 male deaths, there were 109 of females. Of the total deaths, 3,998, or more than one-third, are those of children under five years of age.

Estimating the population at 450,000, the annual rate of mortality per mille for the year 1866 is 30·8; of this rate 6·9 per mille are deaths from cholera.

Contrasting these total deaths which have occurred during 1866 with the average of the past 12 years, as shown in the Table as per margin, we find that there has been an increase in the mortality over the mean of 11 years of 2,138; over that of the past five years, 1,565; and 2,665 deaths over that of the year 1865.

This increase in the mortality has been due not only to exceptional climatic peculiarities, but to the causes which have been above referred to as influencing the death rates of the district civil population.

1855	-	-	10,627.
1856	-	-	8,433.
1857	-	-	6,968.
1858	-	-	10,148.
1859	-	-	10,292.
1860	-	-	13,498.
1861	-	-	13,370.
1862	-	-	14,731.
1863	-	-	11,858.
1864	-	-	10,409.
1865	-	-	11,216.
Mean	-	-	11,050.

518. The actual deaths from cholera during 1866, and other special diseases, contrasted with previous periods, will be seen from the following Table :—

Deaths from
cholera in Madras.

Years.	Fevers.	Diarrhœa.	Dysentery.	Small-pox.	Cholera.
1855 - - - -	1,729	404	1,170	852	1,956
1856 - - - -	1,510	198	939	789	805
1857 - - - -	764	100	731	243	1,378
1858 - - - -	1,896	195	837	475	1,965
1859 - - - -	2,378	358	939	473	1,082
1860 - - - -	2,459	1,012	1,326	245	2,580
1861 - - - -	2,169	981	1,353	655	2,776
1862 - - - -	2,235	1,032	1,171	1,033	3,635
1863 - - - -	2,117	914	1,240	112	1,684
1864 - - - -	2,083	893	1,103	173	574
1865 - - - -	2,190	1,062	1,159	44	944
1866 - - - -	2,256	949	1,316	103	2,984

Other details connected with mortuary statistics of the town of Madras are furnished from my office in a distinct report, where the subject is fully considered.

519. During the year, my attention has been directed to the danger to the public health of the town of Madras, and to the health of the crews of ships at this port, from the consumption of pork made from pigs which are fed principally on the ordure, offal, and other filth which are to be found in the latrines, streets, and roads of the town.

Sale of unwholesome articles of food.

More stringent measures than the mere protection of latrines from becoming feeding places for pigs were pointed out as being necessary.

It was suggested, first, that pigs should be prohibited from being kept within the limits of the town, except in properly constructed styies; and 2ndly, that a most vigilant inspection should be made of pork offered for sale, not only in the public markets, but in the numerous parcherries of Madras, inhabited by the poorest class of East Indians and natives, who feed on this unwholesome meat.

I also suggested, that the pork offered for sale to the ships in the port, should also be carefully examined.

These suggestions have been carefully considered and enforced in the municipal regulations not only for Madras, but for other large towns and cantonments of this Presidency.

520. The great mortality which has occurred during the year under report, from epidemic cholera and fever, especially in those parts of the country where agricultural distress has most prevailed, has called the attention of the Government to the necessity of providing medical aid in places beyond the reach of the medical officers of the Government.

Medical aid in small towns and villages.

The question is one of considerable difficulty, both from the cost which attends the supply of medicines and places of treatment for the poorer classes, and from the difficulty of finding moderately qualified native practitioners. It is unnecessary to do more than to indicate that this subject is occupying the earnest attention of the Government, and of the Medical Department, as shown in the following memorandum, which has just been submitted to Government by the Inspector General, Medical Department.

"1. I have the honour to acknowledge receipt of proceedings of Government, No. 54, of 9th January 1867; and, with reference thereto, will now proceed to give my views as to the practicable means of instructing the native practitioners of India in the approved methods of prevention and treatment of the more common epidemic diseases of the country.

"2. Government are doubtless aware that, as a general rule, the practice of medicine in India is in the hands of a special class, and that the profession is, so to speak, hereditary, its traditions being handed down from father to son. The native physicians, so far as I am aware, receive no other special education than this. Some, no doubt, are able to study the ancient Hindu books which relate to the practice of medicine, or to derive information from translations of more

modern medical works; but it may be said of the great majority of the class of 'Hakeems' and 'Vytians,' that they are destitute of that practical training in the recognition of the symptoms of disease, and of its appropriate treatment, which the State has a right to enforce of all who, as a means of livelihood, seek to follow the profession of medicine.

"3. I would submit that it is highly important that the services of this class of subjects should be turned to useful account in the great sanitary and hygienic reforms which require to be undertaken for the benefit of the people. They are often men of considerable influence in their own spheres, and require only to be guided in right principles of action to become useful to the people.

"4. In practice there would be found considerable difficulty in dealing with the class of native doctors who are the present medical practitioners of the country. The sons and relatives, however, might be brought under training to fit them for their future duties, and in this way a foundation might be laid for the permanent improvement of the medical profession in India.

"5. This is not the first occasion that the important question of seeking to improve the position and status of native doctors and midwives has been mooted. In the year 1862, the Madras Government remarked in proceedings, Judicial Department, No. 1051, of 4th July 1862, that 'the Governor in Council will be prepared to give all possible encouragement to any well-digested plan for imparting a knowledge of European medical science to the native medical practitioners and midwives in the provinces, and he requests that the Principal Inspector General will, in communication with the Principal of the Medical College, the officer in charge of the Lying-in-Hospital at Madras, and any other medical officer whom he may think it advisable to consult, submit a detailed scheme for carrying out the object proposed, with an estimate of its cost.

"6. In connection with this subject, I find that the views of the Principal of the Medical College and of the Superintendent of the Lying-in Hospital were obtained by Mr. Cole; but owing, I believe, to the unfavourable report of the latter on a class of native women trained as midwives, no detailed scheme or estimate for carrying out the suggestion was submitted by the head of the Medical Department.

"7. Of late years, however, considerable encouragement has been given to the training of midwives, both in Madras and in the provinces. In Madras, upwards of 85 European and East Indian women have obtained certificates of competency from the Lying-in Hospital; and at Cuddalore, Manargoody, and Cuddapah, native women have been taught, with a fair amount of success, to practise midwifery. In many of the civil dispensaries lying-in wards have been established, which hereafter, as the people become acquainted with them, will serve as practical schools for the training of midwives.

"8. In only one of the civil hospitals or dispensaries, however, has any beginning been made in the training of young men, unconnected with the Government Medical Establishments, for the medical profession. At Madura, the Committee of Management resolved, in 1864, that some youths should be entertained as pupils; and the subject is referred to in the Dispensary Report of that year, No. 16, of 8th February 1867. Dr. Joseph's report on the youth now under training is attached. It is, I think, quite as encouraging as could be expected.

"9. The unfavourable seasons of the last two years have probably interfered with this movement, for nearly all the dispensary funds have had heavy calls upon them, and have had to restrict expenditure, the people being too poor to contribute donations or subscriptions for merely medical charities.

"10. It may be of interest to notice here, that this question of medical relief to the people has been attracting attention in the Punjab, and that in two or three districts measures have been introduced by which the people voluntarily subject themselves to a tax to provide the salaries of 'Hakeems,' costs of medicines, &c., and to send the sons of Hakeems to the Lahore Medical School. The subject is favourably referred to in the Administration Report of the Punjab for 1864-65 (paragraph 403), and 1865-66 (paragraph 369)—see extracts appended.

"11. In my predecessor's letter, No. 110, of 6th June 1862, it is pointed out that the medical establishments at the head-quarters of each collectorate afford suitable means of practically teaching medicine and surgery on the European systems. Government, in order thereon, of 4th July, No. 1051, Judicial Department, was of opinion that the experiment might be begun by selecting two or three districts, where, 'as in Cuddapah, the local officers, both civil and medical,

medical, have shown a practical interest in the matter." Except in the Madura Dispensary, where one pupil is at present employed, nothing seems as yet to have been done in reference to the order above quoted.

"12. Wherever the plan of training the sons of native doctors is attempted, it will be necessary to employ a medical officer as civil surgeon, who would take a real interest in teaching, and provide an intelligent native surgeon or sub-assistant surgeon, conversant with the vernacular language of the district, to specially superintend the medical studies of the young men. It would be necessary to secure the proper attendance of the pupils upon the hospital course, to give monthly stipends, and to guarantee public employment in the district to those who reached a fixed standard of qualification.

"13. As regards the nature and extent of the teaching, I should not be inclined to exact too much, in the first instance.

"If this class of men could be taught how to do a minimum amount of harm with the greatest amount of good, and if they understood the uses and doses of the more common medicines of the country, and were capable of distinguishing the more ordinary forms of disease, and common injuries, and of treating the same correctly, I should not be inclined to insist upon anything more recondite. The systematic teaching of anatomy and physiology, of chemistry and materia medica, would follow in ordinary course, as the service of Government become sought after, and the supply of candidates enable the standard of teaching to be raised.

"14. The expense to Government of such a scheme, if generally carried out, would be very considerable, but it is a question whether for such a purpose the people might not be expected to help themselves. From an interesting paper appended, it will be seen that, in some districts in the Punjab, the people themselves have voluntarily submitted to a tax of one and a half anna per annum on each house, in order that hakeems might be provided, and medicines, &c., supplied to them in sickness. The details of this scheme are interesting as regards the financial aspect of the question, that I deem it advisable to request that the Government may be pleased to direct Collectors of districts to report whether anything similar to the Punjab plan is feasible in their districts; for if the scheme can by any possibility be made self-supporting, there is much greater probability of its being carried out on a scale likely to be of permanent use in the country.

"I will defer, therefore, the submission of any estimate of cost pending the result of the inquiry, which I trust may soon be made.

"15. I need not say that the Punjab scheme is capable of several modifications, and the details need not be followed implicitly here. The main subject on which I should like information is, whether the inhabitants of the several districts are desirous of assisting in this work, by making some trifling pecuniary sacrifice. Mr. Wedderburn, Collector of Bellary, in letter appended, No. 249, of 22nd February 1867, states that during the late epidemic of fever in that district, the better classes of people purchased quinine pills at the rate of 6 pie per pill, and that gentleman seems to think that an extension of the system would do good. Regarding this subject, I can only say that there can be no objection to the preparation and sale of large quantities of useful medicines, if the people are prepared to purchase them. The money recovered can be again applied to the purchase of drugs, and, without any actual cost to Government, an immense amount of useful assistance might be afforded to meet the frequently recurring epidemics of fever and cholera."

From *J. M. Joseph, Esq., LL.D.*, Acting Zillah Surgeon, Madura, to the Secretary to the Principal Inspector General, Medical Department, Fort Saint George; dated Madura, 18 February 1867, No. 16.

"1. WITH reference to your Memorandum, No. 591, dated the 14th instant, I have the honour to report that there is only one pupil who is locally entertained at the Public Civil Dispensary; he commenced his studies on the 1st of November 1865; I have carefully examined him; I find that he possesses a very fair knowledge of drugs and their uses; he is quite competent to compound medicines, and to prescribe for cases of cholera and ordinary cases of affections of the bowels, intermittent fever, &c.; he is also well acquainted with vaccination, tooth-drawing, dressing, and bandaging.

"2. I am of opinion that it would be desirable that he should continue his studies at the dispensary for six months longer before he is sent out as a native doctor."

EXTRACT from the Administration Report of the Punjab Territories for the Year
1864-65.

"Para. 403. THE employment of native hakeems for the distribution of European medicines and treatment of the sick under the control of medical officers, a measure briefly adverted to in the last Administration Report, has been attended with success in some districts. In the district of Ambala, a class of students has been formed from among the sons of these native practitioners, two of whom have proceeded to the Lahore Medical School to qualify as native doctors. It is hoped that the system may now be gradually extended, that thus the services and influence of these persons, who already possess the confidence of the native community, may be utilised in overcoming existing prejudices against the use of European remedies."

EXTRACT from the Administration Report of the Punjab Territories for the Year
1865-66.

"Para. 369. To this general disinclination to contribute to the cost of dispensaries, there was a noticeable exception in the case of the Sylcote district. In that district the people have agreed to the imposition of a cess of one anna per house per annum for the purpose of providing funds for the establishment of a dispensary at each tahsil or fiscal sub-division of the district. The cess is collected by the zaildars, or superior village headmen, without the interference of Government officials, and the expenditure controlled by local committees elected by the people, subject to the general control of a district committee, composed of four members, one for each tahsil, presided over by the Deputy Commissioner. The income of the current year is estimated at 10,000 rupees, and out of the proceeds, four dispensaries, with suitable establishments, have been opened, one in each tahsil; and, with the surplus funds, seven young men, most of them sons of native practitioners, have been sent to the Government Medical School at Lahore for education."

"A SCHEME for making useful the services of the native hakeem, has been introduced with success into some districts of the Punjab. It may, perhaps, be made available, *mutatis mutandis*, for other districts and remote parts of India."

"There are two schools of medicine known amongst the natives of the Punjab, the Yunani, or Greek School, and the Misrani, or Egyptian School, otherwise known as the Hindee School. The books of the former are in the Arabic or Persian language, and some science may be found in it. The latter is almost entirely empirical, and undeserving of support; its text books are in Sanscrit or Hindee. Both equally disregard anatomy, and the professors of neither pay any attention to surgery, leaving this to barbers."

"The problems for solution are two—

"1st. How to bring into useful action that knowledge which now exists amongst native hakeems.

"2nd. How to supplant their erroneous system by the higher knowledge and more correct practice of modern European medical science.

"The scheme laid before the readers of this memorandum was originally introduced, it is believed, into the Sylcote district by the Deputy Commissioner, Major T. W. Mercer, and has since been extended into other districts. Briefly, it is this: to raise a voluntary tax from the people themselves, and spend it in (1) supply of medicine gratis; (2) pay of native hakeems; (3) scholarships given to deserving young men, which shall enable them to go through the curriculum of training at some recognized medical school under English instruction.

"*Income.*—The details are as follows, in one district into which it has been lately introduced:—The plan being explained to the people at meetings called for the purpose, their consent has been willingly obtained to the collection of one anna and a half per annum per house. Taking an average of four souls to a family, the incidence of this is a fraction over a halfpenny a head per annum, which can hardly be said to be above the means of the poorest. However, if any be exempted by the committees to be presently described, it is expected that the charitable members of those committees will make up the deficiency. A donation of one rupee a year procures the exemption of nearly 11 poor families—no hardship is likely to accrue.

"List of houses in every village are handed by the patwarrees to the member of the local committee in whose circle they reside. The collections are made half-yearly or yearly, by the headman of the village, or choudhri of the town or quarter, and paid either direct into a native bank, or to the committee man, who pays it into the bank.

"*Committees.*—The committees are appointed by the district officer, one committee for each tahsil subdivision, or one for the whole district, as may appear most expedient. The President must not be a Government officer, but a sirdar, or other non-official person, honoured and trusted by the community. The committees appoint each their own banker. These precautions prevent the risk of any suspicion that the Government is collecting a tax for its own purposes. The committees likewise appoint each their own druggist, whose wares they are at liberty to inspect, and are responsible that, in case of fraud or adulteration, prosecutions are instituted against the offenders. The committees should contain a representative of every class; and should be allowed to propose additions to their number up to a certain limit. Probably six or seven members for each tahsil subdivision will ordinarily

ordinarily be found a convenient number. The tahsildar is a member, but not the president. The heads of the several local committees unite, under a general president, to form the district committee.

"Hakeems."—The native physicians are chosen entirely by the local committees, by examination, with a due regard to the wishes of the people among whom they are to work. Strangers should never be introduced against the goodwill of the inhabitants, as it stands to reason that they will never be employed. Three or four hakeems are appointed to every Police Station Circle; with due regard to local necessities, density of population, facilities for travelling, &c. Each hakeem lives as near the centre of his circle as possible, and each has a compounder, or apprentice, attached to him, who may eventually succeed him, or take a scholarship.

"Scholarships."—As many youths as the local funds will allow go to the nearest Medical School of European science. The fee of the Lahore Medical School for each pupil is 12 rupees per mensem, of which the charges for tuition, dissections, books, &c., amount to one-third, the remaining eight rupees being paid over to the pupil. On the completion of the course, the pupils return to their own neighbourhood to supplant the unskilled native practitioner, or obtain employment wherever they can find a practice, as in England.

"Medicines."—An annual grant is made for medicines, each Yunani hakeem being allowed to spend up to 10 rupees per mensem, and each Mistrani practitioner up to six rupees per mensem; the medicines used by these latter being less costly than those used by the Greek School. A grant of 500 rupees a year is made for English medicines. As the plan becomes developed, by the return of properly instructed men from college, these proportions will naturally alter.

"Dispensaries."—In every tahsil, a branch dispensary is established with a resident native doctor and staff, duly trained in English practice. A case of sufficiently useful and good surgical instruments may be procured from London for 20 £. Grants for these instruments, and also for building the dispensaries, are made either from the Medical Fund now described or from the District Nuzzool, or Ferry Funds, as may be most convenient. The native doctor is expected to treat all surgical and medical cases brought to his notice, and to exercise a control over all the hakeems in that tahsil. The civil surgeon of the districts, in the same way, superintends the general working of the whole system, and as its professional head; while administrative details are managed by the committees, under the general supervision of the civil authorities. The remuneration of the civil surgeon is fixed at 50 rupees per mensem; he pays his own travelling expenses.

"Finance."—The hakeems are paid, by cheques drawn on the banker, by the president of the local committee. The allowance for medicines may, in like manner, be paid to the hakeems in cash, by the banker on the president's cheques, or paid to the druggist on his producing before the president a bill countersigned by the hakeem, and supported by vouchers showing medicines supplied to sick persons on the hakeem's prescriptions. No money transactions are allowed with the tahsildar or any Government Treasury.

"Specimen Balance Sheet."—The district, of which the details are now given, is a populous one, and hence the fund is large; but much may be done even in smaller districts, particularly if the population be dense.

INCOME.		Rs.	Rs.
Tax at an anna and a half per house per annum, on 180,203 houses	- - - - -	-	16,894
EXPENDITURE.			
Annual grant for Native medicines	- - - - -	4,000	
Annual grant for English medicines	- - - - -	500	
8 Scholarships, at 12 rupees per mensem each = 12 by 12 by 8	- - - - -	1,152	
6 Hakeems, at 25 rupees each per mensem	- - - - -	1,800	
1 Hakeem, at 20 rupees per mensem	- - - - -	240	
1 Hakeem, at 17 rupees per mensem	- - - - -	204	
14 Hakeems, at 15 rupees each per mensem	- - - - -	2,510	
19 Hakeems, at 12 rupees each per mensem	- - - - -	2,736	
1 Deputy hakeem, at 10 rupees per mensem	- - - - -	120	
2 Native doctors and compounders, 32 rupees each per mensem	- - - - -	768	
Civil Surgeon	- - - - -	600	
41 Apprentices to hakeems, at four rupees each per mensem	- - - - -	1,968	
3 Writers, at eight rupees each per mensem	- - - - -	288	
TOTAL	- - - - -	Rs. 16,886	
Balance available for contingencies	- - - - -	8	
			16,894

"Miscellaneous."—The hakeems are not allowed to demand fees, or to refuse to attend any one, on pain of dismissal. It is not to be expected or desired that they should never accept fees from wealthy or grateful patients, but their attendance is to be considered

strictly gratuitous. The quality of their work may not be very good at first, and indeed much of it may probably be almost nugatory; but in course of time it is to be hoped that prejudice will be so far overcome, that English science will have free scope for action, and many valuable lives may be preserved.

In addition to this, it may be remarked, that this will prove a most valuable agency for the discovery of female infanticide, which goes on in many parts of India, and has baffled our most industrious and intelligent officers. Vaccination and conservancy will also be greatly advanced, and some of the most difficult social problems of the day may be satisfactorily solved."

From the Collector of Bellary, to the Deputy Inspector General of Hospitals, Ceded Districts; dated Bellary, 22 February 1867, No. 249.

*Calomel, gr. i.
Dover's powder, gr. ii.
Quinæ Sulph. gr. iii.
M. ft.
Pill 1—One three times a day in the absence of fever.

"1. OWING to the prevalence of fever of a severe type in several talooks of this district, which was further reported to have proved fatal in many instances, I applied to you for a supply of fever pills,* which I forwarded to the talooks where the disease was said to be most prevalent, with directions as to their use, and orders to the tahsildars to distribute the same, and to report the effects. I have only had a report from the tahsildar of Tadpatri, to whom 1,400 pills were sent. He reports favourably of the effects of the pills, and of the demand for them.

"2. As the gratuitous supply of medicine to the population by Government, can only be effected in a limited degree, and as numbers of sufferers from fever would find no difficulty in paying for the cost of the medicine, a charge of six pies per pill was made, the proceeds of which sales may be employed in still further extending the supply of useful and somewhat costly medicine so much wanted in this remote district.

"3. Among the useful professions in this country, there is scarcely any capable of such an extent of good as that of medicine, and if by any way an educated staff of native practitioners could be organized, I have little doubt that they would find a remunerative practice among the wealthier classes in every talook, or in each cushbah town.

"4. Until such time arrives, the sale of medicine at a rate which enables it to be reached, even by the labouring classes, will confer much good, and the funds raised thereby, might be applied to extend the usefulness of dispensaries.

"5. I have pointed out to the people, that the gratuitous distribution of such medicine as prophylactic of fever, &c., is as great a charity to the poor as the supply of food in enabling the sufferer to regain his health, and resume his work.

"6. I annex a description of the fever, as ascertained from local inquiry, and must beg indulgence if it is unscientifically recorded.

"Premonitory symptoms,—sensation of extreme cold, shivering. Hot stage,—intense thirst, giddiness, delirium, bilious vomiting. Favourable symptoms,—perspiration and coolness of body. A relapse after four days is not uncommon. The fever is difficult to be shaken off, and occasionally dropsical symptoms are developed."

ORDER thereon, 10 June 1867, No. 1307.

"1. ORDERED, that the above letter be communicated to the Board of Revenue, with instructions to call upon all Collectors to institute at once careful inquiries, to ascertain whether the people generally are in favour of the adoption of the proposed scheme, and willing to contribute a voluntary cess to meet the expense of carrying it out. It will be observed, that in the Syalkote district in the Punjab, a cess of one anna per house yearly, sufficed for the establishment of four talook dispensaries, with suitable establishments, and to provide seven scholarships for the sons of native medical practitioners at the Lahore Government Medical School. In another district, a yearly cess of one-and-a-half anna per house produced an income sufficient to provide eight scholarships, to secure the services of 42 hakeems, two native doctors and compounders, to maintain 41 apprentices, and to make liberal grants for medicines, &c. The Collectors should use their best endeavours to secure the services of all the educated inhabitants of their districts, in making a suggested scheme generally and correctly understood, and in obtaining accurate information as to the wishes of the people.

"2. The scheme appears to Government to contain many elements of success, and to promise very great advantages to the people if it can be carried out, and the Government are greatly indebted to the Inspector-general for placing it before them in so practical a form.

"3. The Government are sure that the Collectors will recognise the great importance of the subject, and will do all in their power to bring the matter to a successful issue."

SECTION V.

MISCELLANEOUS.

521. In the month of April 1866, the Government of Madras, in accordance with a recommendation made by the Governor General in Council, to the Secretary of State for India, modified the Sanitary Commission at Madras, which had formerly consisted of a president and four members, by retaining only the president, as sanitary commissioner, and one member, a medical officer, as secretary. This change had, pending the sanction of the Secretary of State, been made as regards the Bengal sanitary commission. No decisive answer has been received from the Secretary of State for India, regarding the future constitution of the sanitary commissions at each Presidency. In Bombay the sanitary commission has remained as originally constituted. The experience which I have had of both systems induces me to think that it is of advantage to retain at the Presidency a consultative body, such as the sanitary commissions were under their original organization.

Reorganization of
the Sanitary Com-
mission.

I doubt whether the present system of naming committees for the determination of questions affecting the health of the army or the civil population works as efficiently as the reference of these questions to a permanent commission accustomed to the consideration of sanitary questions, and qualified, by frequent experience, to value the evidence produced before them.

The excellent practical results of the War Office Sanitary Commission, in England, and the complete manner in which phenomena connected with the health of troops are investigated support this opinion.

522. The following scheme for the establishment of a public health service in the Madras Presidency, which was submitted to Government in 1865, is still under the consideration of the Secretary of State for India :—

Public health
service.

“ 1. In the orders constituting the Sanitary Commission, it was stated that the diminution of mortality in the army, and the improvement, generally, of its sanitary state, are the primary objects which the Government has in view: but it was added, ‘ that the full improvement in the health of European troops which the Government hopes to see effected, cannot be brought about by measures which are solely directed to the amelioration of the sanitary condition of the soldiers, as such.’

“ 2. It was therefore indicated that the Government looked forward to the growth of a great system of successful sanitary administration working uniformly throughout the country.

“ 3. My attention, since I have taken charge of my present office, has been directed to the best means of carrying out the intentions of Government. It appeared to me that it was necessary, as a first step towards establishing a second system of sanitary administration, to give additional powers to the civil and military authorities, to enable them to enforce the regulations which it may be found necessary to issue for the protection of the health of the army in its cantonments, and of the civil population in towns and rural districts.

“ 4. This course has been already adopted in Bengal by the passing of the Act XXII. of 1864, the Military Cantonment Act, and by Act III. of 1864, the District Municipal Improvement Act.

“ 5. Acts very similar to these have recently been introduced by the Madras Government into the Legislative Council, and will doubtless soon become law.

“ 6. Having obtained the legal powers necessary for effective sanitary action, it remains to be considered what should be the agency to carry into effect the provisions of the law. It has been proposed that the sanitary administration of each great military station should be conducted by the officer commanding the station, assisted by a committee; and in the rules submitted to Govern-

ment in connection with the Military Cantonment Act, it has been proposed to place under the orders of the Military Cantonment Committee an executive officer, to be called the Local Public Health Officer, specially charged with the executive duties of conservancy; 2ndly, an executive engineer, specially charged with the works of construction and repair required in cantonments; and 3rdly, the superintendent of police, who is specially under the direction of the officer commanding in all that relates to police.

" 7. In like manner the magistrate of every district should, I submit, be, as at present, the guardian of the public health throughout his province. In all the important towns he will be assisted by municipal committees, chosen from the most influential and intelligent inhabitants.

" 8. Having in view the great size of the districts in the Presidency, it will not be possible for the magistrate of the district to preside over all these municipal institutions, and his authority in these matters will be delegated to his subordinate officers, in the same manner as it has been found necessary to delegate his magisterial and revenue duties. But the chief magistrates of every district will be responsible to the Government for the preservation of the public health in his province, in the same manner as he is responsible for the revenue and magisterial administration.

" 9. I propose that, at certain civil stations where there are native troops, and at other civil stations and towns, there should be appointed local health officers, acting as the executive conservancy officers, at the disposal of the magistrate, as president of the municipal committee of these places. The duties of the local health officer will be most carefully to attend to the sanitary condition of all parts of the town and station under his charge; to see that all regulations for the proper drainage and cleanliness of the streets and roads are carefully observed; that the markets, slaughter-houses, public latrines, and other places requiring special supervision, are maintained in a proper sanitary state; that unwholesome food or drink are not offered for sale; and, generally, that all orders for the preservation of the public health are strictly obeyed. On the appearance of epidemic disease at any place within his charge, the health officer will inquire into its cause, and recommend to the magistrate and the municipality such measures of precaution as may be requisite for preventing or mitigating the disease.

" 10. Having provided these health officers for the large military cantonments for the stations which are of a mixed civil and military character, and for the more important towns, it remains to make provision for an agency to superintend the general working of the sanitary administration of the whole country.

" 11. For this and other duties, to be hereafter detailed, I would propose to divide the Presidency into the same number of circles as has been done for the purpose of police inspection, and to each of these four ranges to appoint a health inspector.

" 12. These would be superior officers of the Public Health Department, placed, in respect of the public health, equally at the disposal of the chief military and civil authorities within their respective ranges.

" 13. It remains to provide for a chief officer of the Department, directly in communication with the Government in the Civil and Military Departments, the channel by which all the requirements of the public health of the country should be represented to Government, and who should be responsible to the Government for the public health in the same manner as the Inspector General of Police is responsible for the public safety.

" 14. To the President of the Sanitary Commission there have been in some measure assigned these duties in respect of the health of the army, and I would propose to enlarge the sphere of his duties and responsibility by constituting

tuting him the head of the public health service, and considering him as the Inspector General of Health throughout the Presidency.

“ The Public Health Department would then be constituted as follows :—

“ I. Inspector General of Public Health and President of the Sanitary Commission.

“ II. Inspectors of Public Health.

“ III. Local Health officers for military cantonments and stations, and for civil stations and towns.

“ 15. I will briefly describe the duties of each of these officers.

“ 16. The President of the Sanitary Commission will continue, as at present, assisted by his colleagues, to offer advice and suggestions to Government in the Military Department in all that concerns the health and welfare of the army. In like manner he will, as Inspector General of Public Health, advise the Government in all that relates to the public health of the civil population of the country.

“ 17. To him will be assigned the duty of collecting the health statistics of both the civil and military population in communication with the magistracy of the district and the local health officers, and he will keep the Government, by means of periodical returns and reports, as thoroughly and minutely informed of the public health, as they are informed by the head of the Police Department of the criminal condition of the people.

“ 18. In his executive capacity he would make tours of inspection, and, in communication with the officers commanding cantonments and the civil officers throughout the country, thoroughly examine the regularity and progress of the sanitary administration throughout the country, introducing uniformity of action. He will during these tours assist, with his advice and the experience acquired as the head of the Health Department, the magistrates and municipal committees, while, on the other hand, the practical acquaintance which he would acquire with all the important cantonments, towns, and stations, will enable him to give reliable information and advice to the Government in all that relates to the public health.

“ 19. The ‘ Inspectors of Public Health,’ would be under the immediate direction and instruction of the Inspector General; by the diaries and reports of these officers the Inspector General of Public Health would be kept constantly informed of all that is taking place in every part of the Presidency, bearing directly or indirectly on the public health, and be able to warn and advise when any necessity arises for taking precautionary or preventive measures for the safety of the army or of the civil population.

“ 20. As their name implies, the duty of these officers would be chiefly that of *observation*. They would watch, without any direct interference, the regularity with which the sanitary administration was being carried on, and point out to the proper local authorities any negligence or failure in the action of that administration. They would communicate personally with the officer commanding cantonments, and afford him the aid of all that they have observed in the other cantonments within their ranges, and be specially directed to afford him advice and assistance.

“ 21. They would relieve the magistrates, who are already overburdened with their various duties, of the details of personal inspection, and they would bring to the notice of these officers all that is required for the proper sanitary administration of their districts.

“ 22. To these inspectors it would specially belong to give vitality to the whole system of sanitary administration, and to prevent any relaxation of the efforts of the cantonment and municipal committees. To these officers would belong the constant and careful inspection of the rural districts, and the principal

cipal lines of march, and the usual camping grounds of the army. They would also, for health purposes, inspect the sites and supervise the sanitary arrangements of the great fairs and pilgrimages throughout the country. They would ascertain and report the sanitary condition of the railway stations. During their constant tours throughout their ranges, it would form part of their duties to visit all gaols, civil hospitals, and dispensaries. In military cantonments they would, after reporting their arrival to the officer commanding, and, at such time as might be approved by him, visit the barracks and regimental lines. The result of these visits would be entered in the diaries submitted to the Inspector General of Public Health, and a copy of those entries would also, at the same time, be submitted to the officer commanding the cantonment, or to the civil officer of a station, with a view to such orders being issued as may appear necessary upon any point brought to notice.

“ 23. And now as to the cost of the Public Health Department. I propose to divide into three classes, and to allot a different rate of remuneration to the local health officers assigned to these stations, at which there are troops.

“ 24. The local health officers appointed to towns and civil stations, where there are no troops, would, with the exception of Ootacamund, be paid at a uniform rate. The salaries assigned to the local health officers will be in addition to their usual pay and allowances.

“ 25. The salaries which I would propose for the several grades of officers of the Public Health Department, are as follows :—

								<i>Rs.</i>
4	Public Health Inspectors at	-	-	-	-	-	-	1,000 each.
4	Local Health officers in first class military stations	-	-	-	-	-	-	200 each.
3	Ditto - - in 2nd - - ditto	-	-	-	-	-	-	150 each.
18	Ditto - - in 3rd - - ditto	-	-	-	-	-	-	100 each.

Local Officers of Civil Stations and Towns.

1	(Ootacamund)	-	-	-	-	-	-	150.
14	Ditto	-	-	-	-	-	-	50 each.

“ 26. Appended to this memorandum is a tabular statement exhibiting the 1st, 2nd, and 3rd class military stations, and the towns and civil stations to which local health officers should be appointed. The ranges of inspection assigned to the Public Health Inspectors, and the salaries and establishments, travelling allowances, &c. of all these officers, are also roughly shown. It will be observed that the total cost of such a public health establishment, complete in itself, and I believe adequate for the present requirements of the sanitary administration of the country, is 9,000 rupees per mensem, or 108,000 rupees per annum.

“ 27. The next question is, the provision of funds to enable improvements to be effected in the sanitary condition of these stations and towns. For the purely military purposes, such as the conservancy and drainage of barracks and hospitals in military stations, and the conservancy of native lines and military archeries and bazaars, it would seem proper that the expenditure should be met by appropriate grants from the general revenues of the country. The funds required for towns and the civil portions of cantonments will be provided from the municipal rates about to be levied, under the Act now before the Legislative Council.

“ 28. But it would be premature in the present social condition of this country to expect to raise such a high rate from the towns, as would suffice not only to improve their sanitary condition, but also to meet the charge of the Public Health Department, and I therefore propose that this latter charge should be borne by the State.

“ 29. In conclusion, I may glance at other duties which may be advantageously assigned to the proposed Public Health Department.

“ 30. In order to judge of the present condition of the public health, and to test hereafter the action of sanitary administration, we require to have ascertained, with something approaching to accuracy, the numbers of the population, and the rates at which births and deaths take place. We require also to know the

the relations between the variations of climate and season, and the rates of mortality, and the prevalence of disease in every district in the Presidency. We must obtain an insight into the peculiarities of social life in different parts of the country. The density or sparseness of the population, their means of locomotion, their occupations, their food, the more or less degree in which they are exposed to influences injurious to health, and the best method of removing or reducing these influences.

“ 31. The important subject of the registration of births and deaths throughout the Presidency is occupying the attention of the Government; and it is proposed, I believe, to collect these most important statistics through agencies which already exist, and which are well able to perform the duties required, namely, the village officers and the mofussil police. I would suggest that the returns thus collected should be sent to the public health officers, and that to them should be confided in the first instance the tabulation of these returns under the general supervision of the magistrates of the districts, in the same way that the police officers under the same supervision, tabulate all the criminal statistics throughout the country.

“ 32. I am of opinion that the President of the Sanitary Commission as the head of the Public Health Department should also be the Registrar General of births and deaths throughout the Presidency, and that he should by means of the health inspectors, exercise a vigilant control over the civil and military registration throughout the country.

“ 33. Returns in prescribed forms of births and deaths, should be submitted monthly by the public health officers to the office of the President of the Sanitary Commission, with a view to an annual registration report being prepared by that officer to accompany his annual report on the public health, military and civil, of the whole Presidency.

“ 34. I have not in this scheme made any proposal for the appointment of a public health officer for the town of Madras. Such an appointment is as much required in Madras as in any other Presidency town. But such an officer will form a part of the municipal service of the town, and I reserve the suggestion of improvements which should be introduced into the municipal management of Madras, for a future report.”

APPENDIX (A.)

ESTIMATE of the Proposed Establishment of the DEPARTMENT of PUBLIC HEALTH
for the Presidency of *Madras*.

PUBLIC HEALTH INSPECTORS' RANGES.

Districts :		Districts :	
Ganjam, Vizagapatam, Godavery, Kristna, Nellore, and <i>Secunderabad,</i> <i>Raipore,</i> <i>Hoshungabad,</i> <i>Chandah and Kamptee.</i>	Northern Range.	South Canara, Malabar, Coimbatore, Salem, and Mercara, and <i>Mysore.</i>	Western Range.
Bellary, Kurnool, Cuddapah, North Arcot, Madras (beyond municipal limits), <i>Bangalore</i> and <i>Hurryhur.</i>		South Arcot, Tanjore, Trichinopoly, Madura, Tinnevely, and <i>Quilon.</i>	
	Central Range.		Southern Range.

APPENDIX (A).—Estimate of the Proposed Establishment, &c.—*continued.*

PUBLIC HEALTH INSPECTORS.

	Monthly.	Yearly.
	<i>Rs.</i>	<i>Rs.</i>
4 Inspectors, at 1,000 rupees consolidated salary - - - -	4,000	48,000
4 Clerks for Inspectors, at 50 rupees - ditto - - - -	200	2,400
Travelling Allowance to 4 Inspectors, as under police rules, at (salary) 200 rupees per mensem - - - -	800	9,600
Travelling Allowance for 4 Clerks, at (salary) 25 rupees - - - -	100	1,200
<i>Rs.</i>	5,100	61,200

LOCAL HEALTH OFFICERS.

Military Stations (First Class):						
Bangalore	-	-	-	-		
Secunderabad	-	-	-	-		
Bellary	-	-	-	-		
Kamptee	-	-	-	-		
} 4 at 200 rupees - 800 9,600						
Military Stations (Second Class):						
Trichinopoly	-	-	-	-		
Saint Thomas' Mount	-	-	-	-		
Cannanore	-	-	-	-		
} 3 at 150 rupees - 450 5,400						
Military Stations (Third Class):						
Cuttack	-	-	-	-		
Berhampore	-	-	-	-		
Vizagapatam, including Vizianagarum	-	-	-	-		
Masulipatam	-	-	-	-		
Kurnool	-	-	-	-		
Cuddapah	-	-	-	-		
Vellore	-	-	-	-		
Palamcottah	-	-	-	-		
Quilon	-	-	-	-		
Mangalore	-	-	-	-		
Calicut with Mulliapooram	-	-	-	-		
Mercara	-	-	-	-		
Hurryhur	-	-	-	-		
Mysore	-	-	-	-		
Wellington and Coonoor	-	-	-	-		
Raipore	-	-	-	-		
Hoshungabad	-	-	-	-		
Chandah	-	-	-	-		
} 18 at 100 rupees - 1,800 21,600						
Civil Stations and Towns:						
Ootacamund	-	-	-	-		
Chicacole	-	-	-	-		
Rajahmundry	-	-	-	-		
Guntoor	-	-	-	-		
Nellore	-	-	-	-		
Chittoor	-	-	-	-		
Tinnevelly	-	-	-	-		
Cuddalore	-	-	-	-		
Chingleput	-	-	-	-		
Tellicherry	-	-	-	-		
Cochin	-	-	-	-		
Coimbatore	-	-	-	-		
Madura	-	-	-	-		
Tranquebar	-	-	-	-		
Tanjore	-	-	-	-		
} 150 rupees - 150 1,800						
} 14 at 50 rupees - 700 8,400						
				3,900	46,800	
Total Cost of 4 Inspectors of Ranges, with Clerks, and Travelling Allowance - - - - -					5,100	61,200
Total Cost of Local Health Officers - - - - -					3,900	46,800
TOTAL COST - - - - - Rs.					9,000	1,08,000

APPENDIX (B.)

STATEMENT of the Chief Towns within the Limits of the Presidency of *Madras* in each proposed Range of the Public Health Inspectors, and the Estimated Population of these Towns.

NORTHERN RANGE.

Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.	Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.
			<i>Rs. a. p.</i>				<i>Rs. a. p.</i>
Ganjam -	Cuttack -	-	100 - -	Godavery -	Juggunaikpore -	6,751	
	Ganjam -	5,741			Samulcotta -	5,751	
	Berhampore -	17,945	100 - -		Pittapore -	8,444	
	Chicacole -	11,828	50 - -		Coringa -	6,875	
Vizagapatam -	Ankapilly -	13,317			Talares or Palekur-roo.	6,285	
	Munagapuka -	5,035			Nellapilli -	5,126	
	Madugole -	6,399			Tuni -	5,713	
	Vizagapatam -	16,758	100 - -	Kistna -	Baputla -	8,933	
	Vizianagram -	17,019			Cherala -	7,859	
	Bimlipatam -	5,912			Guntoor -	15,333	50 - -
	Jami -	5,415			Prattipaud -	6,435	
	Salur -	9,292			Juggiaputt -	7,691	
	Bobili -	11,619			Masulipatam -	35,820	100 - -
	Parvuttipur -	5,870			Nuzeid -	5,564	
Godavery -	Palcondah -	7,790		Nellore -	Nellore Town -	26,637	50 - -
	Capelaisweram -	6,628			Ongole -	5,026	
	Amalporc -	5,288			Allur and Kottapatam.	6,002	
	Pulwela -	5,008			Vencatagiri -	6,435	
	Nursapore -	5,912					
	Achanta -	5,651			Secunderabad -	-	200 - -
	Attili -	5,275			Raipore -	-	100 - -
	Rajahmundry -	15,283	50 - -		Hoshungabad -	-	100 - -
	Dowlaisweram -	7,870			Chandah -	-	100 - -
	Peddapore -	9,176			Kamptee -	-	200 - -
	Ellore -	20,131					
	Coconada -	8,814					

TOTAL COST OF NORTHERN RANGE.

1 Health Inspector	-	-	-	-	-	-	<i>Rs. a. p.</i>
Travelling Allowances (say)	-	-	-	-	-	-	1,000 - -
1 Clerk	-	-	-	-	-	-	200 - -
Travelling Allowances (say)	-	-	-	-	-	-	50 - -
2 Local Health Officers, at 200 rupees	-	-	-	-	-	-	25 - -
7 " " at 140 "	-	-	-	-	-	-	400 - -
4 " " at 50 "	-	-	-	-	-	-	700 - -
							200 - -
<i>Rs.</i>							2,575 - -

CENTRAL RANGE.

Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.	Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.
			<i>Rs. a. p.</i>				<i>Rs. a. p.</i>
Kurnool -	Kurnool -	27,849	100 - -	Bellary -	Ooravaknoda -	5,982	
	Maddikera -	5,012			Taudputry -	6,415	
	Nundial -	8,219			Yadiky -	6,243	
	Cumbum -	13,138			Raidroog -	6,546	
Bellary -	Bellary and Cowl Bazaar.	37,459	200 - -		Dhurmaveram -	6,386	
	Hospett -	8,786		Cuddapah -	Poodootoor -	5,189	
	Cumply -	8,294			Budvial -	6,324	
	Hurpunhully -	5,965			Cuddapah -	10,347	100 - -
	Adonie -	17,476			Vaimpully -	5,540	
	Kosigy -	5,303			Muddenpilly -	5,634	
	Yemmiganoor -	5,653			Kundkhor -	6,735	

APPENDIX (B).—Statement of the Chief Towns within the Limits of the Presidency of *Madras*, &c.—*continued*.

SOUTHERN RANGE.

Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.	Districts.	Towns and Villages.	Population by last Census.	Cost of Local Health Officers.
			<i>Rs. a. p.</i>				<i>Rs. a. p.</i>
South Arcot -	Punrooty -	5,369		Madura -	Thavaram -	5,574	
	Cuddalore -	37,633	50 - -	(continued.)	Bodinaickenoor -	9,652	
	Trippalyur -	5,268			Shaevagungah -	7,471	
	Munjacoopum -	5,256			Dindigul -	6,258	
	Porto Novo -	7,499			Ramnad -	9,687	
	Chellambrum -	11,789			Paramagoody -	12,000	
	Trinamalay -	6,073			Keelakurray -	10,000	
					Tondy -	6,000	
					Danicottah -	6,000	
					Aroopocottah -	10,000	
Tanjore -	Tanjore -	38,578	50 - -				
	Trivady -	5,476					
	Vullum -	6,258					
	Combacōnum -	34,373					
	Madiarjenum -	5,425		Tinnevelly -	Paupancollum -	7,233	
	Iyempettah -	6,028			Shirmadavy -	5,716	
	Myaveram -	21,545			Veeravanulloor -	10,456	
	Tranquebar -	19,517			Moolicarriputty -	5,680	
	Negapatam -	20,362	50 - -		Vullyoor -	6,712	
	Nagore -	13,221			Tencaushee -	8,461	
	Trivalore -	7,071			Colasagaraputty -	6,147	
	Manaargoody -	12,283			Kuddianelloor -	6,074	
					Sunkaranainarcoil -	5,331	
					Pooliangoody -	5,161	
					Cusbah of Shevagiry Zemindary -	5,468	
Trichinopoly -	Trichinopoly Fort -	97,154	150 - -		Shevilputur -	15,716	
	Warriore -	8,263			Rajapolliam -	15,326	
	Veerapatchipuram -	7,855			Sivacaushiee -	9,427	
	Seringham -	7,603			Virdooputty -	5,101	
	Torriore -	5,716			Tuticorin -	7,468	
	Arrealore -	5,298			Ettyapoorum -	5,377	
					Tinnevelly -	19,516	
					Pettah (of ditto) -	8,795	50 - -
Madura -	Madura Town -	41,601	50 - -		Palamcottah -	13,399	100 4 - -
	Triumungalum -	5,107			Malapoliem -	10,153	
	Puttoor -	6,186			Tencaray -	7,708	
	Karungalakudy -	8,185			Streevygoondum -	9,380	
	Taudicomboo -	6,634			Siruthandanelloor -	5,616	
	Adyanoothoo -	7,665			Attoor -	5,491	
	Authoor -	5,429			Coilasagrapatam -	56,014	
	Vuthlagoondoo -	7,642			Trichindoor -	,063	
	Kamoody -	6,000			Coilputtam -	11,215	
	Abiramam -	5,949			Oordungoody -	8,433	
	Iyempolliem -	8,847			Kalangoodyirupu -	5,647	
	Palany -	11,161			Satancollum -	7,202	
	Ayakoody -	9,148			Umbasamoodrum -	10,765	
	Combay -	6,029					
	Thenkurray -	7,554					
	Andyputty -	12,142					
	Cumbum -	9,673					
	Mailamungalum -	4,997			Quilon -	unknown	100 - -

TOTAL COST OF SOUTHERN RANGE.

1 Health Inspector	-	-	-	-	-	-	-	-	-	-	<i>Rs. a. p.</i>
Travelling Allowances (say)-	-	-	-	-	-	-	-	-	-	-	1,000 - -
1 Clerk	-	-	-	-	-	-	-	-	-	-	200 - -
Travelling Allowances (say)	-	-	-	-	-	-	-	-	-	-	50 - -
1 Local Health Officer	-	-	-	-	-	-	-	-	-	-	25 - -
2 " " at	-	-	-	-	-	-	-	-	-	-	150 - -
5 " " at 50 rupees	-	-	-	-	-	-	-	-	-	-	200 - -
											250 - -
											<i>Rs.</i> 1,875 - -

Cholera Congress
at Constantinople.

523. The valuable Report of the Cholera Conference reached India in the latter part of the year under report, and at my suggestion the Government have appointed a committee to consider the practical application of such of the conclusions arrived at by the Conference which more immediately relate to India.

The established fact of the transmissibility of cholera and the rapid propagation of the disease by agglomerations of human beings, and the preventibility of the spread of the disease by the improvement of the sanitary conditions of towns, are specially engaging the attention of the committee, and we may hope that the labours of the distinguished men who composed the Conference at Constantinople will lead to fruitful results in this as in the other Presidencies. The control of the periodical pilgrimages, which so continually serve to propagate epidemic cholera, will in itself have a most important effect in reducing the mortality of the civil population.

On 31st January the Chief Secretary to Government communicated to the Sanitary Commissioner copy of letter from the Government of India to the Sanitary Commission of Bengal, enclosing a communication from the French Consul General, containing certain inquiries regarding Asiatic cholera. Government also directed the Madras Sanitary Commission to supply all information required by the Bengal Sanitary Commission for eventual communication to the Cholera Congress at Constantinople. On 6th February the Sanitary Commission, Madras, received a further requisition to the same effect from the Sanitary Commission of Bengal.

The following were the questions then referred for reply :—

1st. Is the Delta of the Ganges, as is generally believed in Europe, the permanent source of cholera ?

2nd. This year it was imported into Egypt by the pilgrims who returned from Mecca ; but had not these pilgrims brought with them the germ of the disease from their original country ?

3rd. Did not these pilgrims count in their number some Mussulmen who came from the districts of India where cholera was raging ?

4th. What is, in general, the rise, progress, and advance of cholera in British India, and what are its chief characteristics ?

5th. Are there any official documents published on cholera, and are those documents procurable ?

6th. In what districts does cholera generally break out, and what are the localities where it rages more or less permanently ?

7th. Have any particular phenomena manifested themselves this year, and if so, what are they ?

8th. Was the cholera unusually violent this year ?

9th. About what time did it break out ?

10th. What is the number of deaths this year, amidst the native or European population, during the Indian commercial year ?

11th. What is the number, on an average, of the pilgrims who left India this year for Mecca ; from what part did they start, and what was their sanitary condition at the time of starting ?

12th. What measures, in your opinion, should be resorted to in order to check the evil, and to extirpate it, if possible, at its origin ?

On 22nd February the Government of Madras transmitted to the Sanitary Commission copy of letter from the President, Bengal Sanitary Commission, to the Chief Secretary to Government, Madras, soliciting information on the following points :—

1st. What is the number of pilgrims who proceeded annually from Madras to Mecca ?

2nd. By what routes do they travel, and what number travel by each route ?

3rd. What was the number of pilgrims from Madras during 1865 ?

4th. What number of pilgrim ships sailed from your Presidency during 1865 ?

5th. Did cholera break out on board any of these ships ? If so, to what extent, and what was the condition of the pilgrims on landing in Arabia ?

After .

After the institution of inquiries by the Commission, the following report was submitted to Government on 10th of March.

(1.) The Sanitary Commission for Bengal having invited the co-operation and assistance of this Commission, to furnish as much information as possible with regard to cholera to enable them to prepare a report to be laid before the Sanitary Congress about to assemble at Constantinople, and having been instructed by Government on the same subject,* they now present their report with a view to its transmission to Calcutta, with such observations as may be thought necessary.

Enclosures 2.

1. Dr. Bidie's Etiology on Cholera.

1. Memo: by this Commission on the marching of Troops.

(2.) The queries put to this Commission in the papers referred to above are answered seriatim, with as much conciseness and brevity as the importance of the subject admits.

Question 1st.—Is the Delta of the Ganges, as is generally believed in Europe, the permanent source of cholera?

Question 1st.—Is the Delta of the Ganges is not now the permanent source of cholera, although a very severe epidemic did originate at Jessore (a place situated there) in 1817, which rapidly spread over a large tract of country; and it is generally supposed that this was the first known outbreak of this pestilence; a fact not at all clearly proved.

This question is more satisfactorily answered in Bengal than in this Presidency, as it appears to this Commission that the opinion therein expressed is purely conjectural. As far as their

Question 2nd.—This year it was imported into Egypt by the pilgrims who returned from Mecca, but had not these pilgrims brought with them the germ of the disease from their original country?

Question 3rd.—Did not these pilgrims count in their number some Mussulmen who came from the districts of India, when cholera was raging?

(3.) The Commission have no reliable data whatever upon which to answer these two questions, and as is shown in their answers to question No 11, the number of pilgrims, who embarked from ports in the Madras Presidency for Mecca, is remarkably small; and they have, at present, no evidence to show either that those who did embark were suffering from any epidemic, or had passed through any district where cholera was prevailing.

Question 4th.—What is in general the rise, progress, and advance of cholera in British India, and what are its chief characteristics?

(4.) This commission are of opinion that the actual origin of this disease is still purely enigmatical, although from long experience with its visitations there are many well-ascertained facts with regard to its progress, advance, and decline, which are now almost universally accepted by medical men in this country.

They are further of opinion that its visitations are governed by the same laws which mark the progress of other epidemics, and that the germs of the disease, when once developed, are propagated in various ways, from one place to another, and that the virulence of the disease is increased in intensity by various local causes, more especially by the overcrowding of large masses of people.

It seems probable that the germ of the choleraic poison is spontaneously generated by the transformation of the elements of organic matter, during their passage, into a state of decomposition, and that the specific cholera cell thus produced rapidly reproduces itself in a similar manner, more especially in the excretions of those attacked.

The nature of this poison is purely conjectural, but probably exists either in a fluid or dry state, and in this form it may be carried about from place to place by various agencies.

Whether this poison introduces itself into the body through the agency of substances taken into the stomach, or directly into the system, through the medium of the lungs, are questions still too problematical to hazard an opinion upon; but that after the introduction of the cholera poison it rapidly exhibits its effects on the system in the most violent symptoms, which are all characterised as efforts on the part of nature to rid the system of some irritant substance.

In the majority of cases the powers of life rapidly fail from the excessive
serous

* Nos. 103 and 78, dated 31st January and 19th February 1866 respectively.

serous discharges which takes place along the whole course of the mucous lining of the intestinal canal, and the person dies in a state of collapse.

The symptoms of this disease are so well known as to render any recapitulation of them unnecessary here ; this Commission will, therefore, confine their remarks to those causes which favour the propagation of the disease, and which they are justified in believing from the accumulation of evidence recorded concerning them.

1st. This Commission have no hesitation in recording their belief that cholera is propagated from one place to another by human intercourse ; and that its course on the map can be traced along the high roads from one station to another. Innumerable instances demonstrating this fact may be given as occurring in this Presidency, of which the following are examples :—

In 1860, the 35th Regiment, native infantry, marched from Hurryhur, in the Mysore country, to Bellary, in the ceded districts, taking with them the carriage of the 16th, the relieving regiment. The 16th Regiment had a few sporadic cases of cholera on the line of march, but it never appeared in an epidemic form.

* “On the fifth morning after leaving Hurryhur *en route* to Bellary, the disease broke out with much severity. On finding that an increasing number were being daily struck down, on the recommendation of the surgeon, the corps, on the 19th January, was broken up into three divisions, each party proceeding by separate routes to different encamping grounds. Immediate marked benefit was the result of this step. Under instructions from the General commanding the division, the regiment was again re-united on the 22nd January. The cholera instantly increased threefold, the type of the disease being also more severe than hitherto ; when, on Surgeon Hadwen’s urgent recommendation, the regiment was again broken up on the 27th January ; the disease at once began to decline, and the last two cases were admitted into hospital on the 4th and 5th February ; but the corps did not re-unite until the 14th February, the day they entered the cantonment. Each division marched five or six miles daily, and the hospital tents were removed regularly twice a day to a fresh spot of ground. Independent of the cholera, diarrhoea prevailed largely.”

* * * * *

Ninety-two fighting men were taken ill with cholera, 50 of whom died ; 129 followers were seized with the disease, and 58 died. Altogether the deaths to admissions were 47·36 per cent.

“A company of Her Majesty’s 74th Highlanders *en route* from Sholapoor to Bellary, in perfect health, one day struck upon an encampment of the above regiment then suffering from cholera ; instantly turning right about, they passed the camp and proceeded by a forced march of 24 miles to Bellary, by another route ; good food and moderate stimulants were served out to them on the march, and they reached Bellary without fatigue. On the second and third day afterwards, 10 men of this company were seized with the disease, of whom seven died. The epidemic did not extend, precautions having been taken not to let these men mingle with the rest of the corps.”

“In March 1857 the left wing of Her Majesty’s 43rd Light Infantry left Bangalore 537 strong *en route* to Madras. For eight days their march was prosperous. On the 9th day, as cholera was reported in the village adjoining their proposed encampment, the commanding officer pushed on to the next halting ground, 11 miles distant ; the entire march of 21½ miles having been performed without apparent fatigue. Here a halt was called for a day. The following morning, after a seven miles march, cholera appeared epidemically in the wing, and in 12 days,

	Men.	Women.	Children.
out of a strength of - - - -	537	65	130
there were seized with cholera - -	98	9	29
and there died from the disease - -	41	5	13

“It is obvious, that the primary cause of this loss of life was the prevalence of the epidemic in the district through which the corps marched ; and that neither fatigue, discomfort, nor dissipation was an exciting cause, is proved by the melancholy fate of two ladies, one gentleman, one child, and one servant, who proceeded over the same road, four days after the epidemic broke out in the

the wing; and although they travelled with all the comforts that affluence usually procures, with one exception, all perished from the disease."

The introduction of cholera into the camp of Her Majesty's 74th Highlanders quartered near the racecourse at Guindy is clearly shown in the following extract from the mortuary report of Madras for 1864:—

"It seems that a hospital cooly of Her Majesty's 74th Highlanders (that corps having at the time cholera cases in camp) was in the habit of coming home of nights to his hut in New Town. A servant of the quartermaster serjeant of 2nd Regiment, N. I., lived in the same hut or house with this cooly, and therefore the chain of communication between the cholera camp and the house in New Town, where the first case occurred, may be regarded as complete. A child of the quartermaster serjeant was taken ill on the night of the 27th, another on the 28th, and both died. On the latter date the wife and child of the serjeant major of the regiment, living close by, were attacked and died, and from this time the other cases followed in rapid succession. It seems that the servant boy had come to the quartermaster serjeant's house late at night on the 27th, and that almost immediately after, the first child that was attacked began to sicken."

"Curiously enough, another instance of the communicable nature of the cholera poison was afforded during the prevalence of the disease in the camp of Her Majesty's 74th Highlanders. It is full of warning and instruction. The particulars are extracted from the Stational Report of the Zillah surgeon of Chingleput."

"Cholera first made its appearance on the 24th February 1864. Two bandymen belonging to this place, who were engaged in transporting tents of the 74th Highlanders from Guindy to Palaveram, when the regiment shifted its quarters in consequence of the outbreak of cholera, in their ignorance appropriated to their own use the *straw spread in the tents* of the cholera patients."

"No sooner had they deposited their loads and turned homewards, than they were seized by the disease, and both fell victims to it the day after their arrival here. The disease now spread, and several cases were reported to have occurred in the town."

This Commission also believes that the transmission of the disease by cholera stools, is now sufficiently proved to lead them to urge that the greatest care be taken in the destruction of all excreta passed from the body.

They are further disposed to hold to the view, that water highly charged with animal organic impurity is a great means of preparing the system to imbibe the poison.

They also believe the following to be acknowledged facts regarding this disease:—

- 1st. That it is more prevalent during the first six months of the year.
- 2nd. That those travelling are more likely to be attacked than those stationary.
- 3rd. That new arrivals, in places where the disease is prevailing, are more subject to attacks than residents.
- 4th. That over-crowding predisposes to the disease, and renders its attack more fatal.
- 5th. Fatigue and debility from all causes predispose to it.
- 6th. That the type of the disease is most acute at the first outbreak of an epidemic, when the majority of cases are fatal. The reverse takes place at its decline.
- 7th. The time of attack is generally at night or early morning.
- 8th. That a relation exists between the prevalence of cholera and the elevation of the surface above the level of the sea, the disease diminishing in frequency with the ascent.

Question 5th. Are there any official documents published on cholera, and are those documents procurable?

(5.) In accordance with this requisition it is suggested that, with the sanction of Government, the following documents relating to cholera, may accompany this Report:—

- 1st. Dr. Lorimer's Report on Epidemic Cholera from 1820 to 1844.
- 2nd. Dr. Cornish's printed Report on the mortality of Black Town for 1860.

3rd. Dr. Bidie's Etiology of Cholera, herewith sent.

4th. Memorandum by this Commission on the marching of regiments in the Madras Presidency, recorded in Proceedings of Government, Military Department, No. 2074, dated 3rd June 1865, herewith sent.

5th. Dr. Balfour's pamphlet on the statistics of cholera.

Question 6th. In what district does cholera generally break out, and what are the localities where it rages more or less permanently?

(6.) As far as this question refers to this Presidency, it may be safely asserted that this disease is rarely entirely absent from any of its large native cities; for, when not prevailing in an epidemic form, sporadic cases constantly occur. The filthy towns of Madras and Hyderabad are examples, and with regard to the latter city, it may be said to form a focus from which cholera is disseminated into the surrounding districts.

Outbreaks of this disease occur with almost unerring regularity in certain towns, which are resorted to annually at certain seasons for celebrating native festivals, and also at shrines such as Mahadao near Nagpore and Juggernath near Cuttack, where pilgrims collect by thousands from distant parts of the country. The entire absence of all conservancy arrangements amongst a large concourse of people, whose constitutions are generally depressed by fatigue and want of proper nourishment, speedily leads to a virulent outbreak; and as these vast masses immediately disperse, they carry the seeds of death with them along every route they travel, and their course may be traced by the dead and dying they leave behind them in their flight. These assemblages may be pointed to, with almost prophetic truth, as likely to form nurseries in which this disease will be hatched and propagated in every direction, so long as present customs continue.

It has been observed that cholera more frequently breaks out in those parts of this Presidency, lying at a low sea level, where the geological formation of the surface is *regur*. The ceded districts and the country on the East Coast in the neighbourhood of Ongole, may be taken as examples.

Question 7th. Have any particular phenomena manifested themselves this year, and if so, what are they?

(7.) No peculiar atmospheric or other phenomena have manifested themselves in the year 1865, as far as the knowledge of the Commission extends. The setting in of the north-east monsoon was late, and at its first burst was attended with a violent cyclone, which was felt a considerable distance inland. It may be here remarked, however, that the almost entire absence of all scientifically recorded observations in this Presidency would place it beyond their power to answer this question at any time satisfactorily.

Question 8th. Was the cholera unusually violent this year?

(8.) No, with the exception of certain isolated outbreaks amongst the pilgrims visiting certain shrines, there has been no general outbreak of cholera throughout the Presidency.

Question 9th. About what time did it break out?

(9.) The particular outbreak referred to in the last paragraph took place at the temple of Mahadao near Kamptee in February.

Question 10th. What is the number of deaths this year amidst the Native or European population during the Indian commercial year?

(10.) This Commission have no means of obtaining this information with any degree of accuracy.

There are no data at the disposal of the Commission for showing what the ratio of mortality from this disease has been amongst the civil population throughout this Presidency, but at Madras, where a mortuary register is kept, the past two years show a decline in the number of deaths as contrasted with previous periods.

This

This will be observed in the following Table :—

Years.					Deaths from Cholera.	Years.					Deaths from Cholera.
1855	-	-	-	-	1,956	1861	-	-	-	-	2,776
1856	-	-	-	-	805	1862	-	-	-	-	3,635
1857	-	-	-	-	1,378	1863	-	-	-	-	1,684
1858	-	-	-	-	1,965	1864	-	-	-	-	574
1859	-	-	-	-	1,082	1865	-	-	-	-	944
1860	-	-	-	-	2,580						

During the past year there has been no very serious outbreak of cholera amongst the European troops in cantonment, and the native army has been quite as exempt from the disease.

The Principal Inspector General, Medical Department, in a letter to the Secretary to Government, Military Department, dated 11th May 1864, writes as follows :—

“ The great mortality from cholera of troops on the line of march sometime since attracted attention. As regards Europeans, in the year 1857, the practice of moving them by *transit* was introduced, and although several thousands of men have been moved in this way subsequently, the cholera mortality has been exceedingly slight.”

“ The measure has undoubtedly been attended by great saving of life, and I should be sorry to see a reversion to the old practice of marching the men from place to place through any short-sighted motives of economy.”

“ The native troops of late years have been moved less frequently, and the cholera mortality has been diminishing in consequence.”

The following Return* shows the proportion of deaths from cholera to all other mortality for 23 years, from which it will be seen that of late years the disease has been somewhat diminishing.

STATEMENT showing the Number and Per-centage of Deaths from all Causes, and especially from Cholera, among European and Native Troops, for the past 23 Years.

YEARS.	EUROPEANS.					NATIVES.				
	Average Strength.	Deaths from all Causes.	Deaths from Cholera.	Per-centage of		Average Strength.	Deaths from all Causes.	Deaths from Cholera.	Per-centage of	
				Deaths from all Causes.	Deaths from Cholera.				Deaths from all Causes.	Deaths from Cholera.
1842 -	12,680	508	163	4·2	1·3	74,618	1,887	741	2·5	0·9
1843 -	12,436	610	206	4·9	1·6	73,763	1,749	905	2·3	1·2
1844 -	13,057	367	54	2·8	0·4	73,983	1,458	519	1·9	0·7
1845 -	12,548	491	124	3·9	0·9	74,861	1,544	708	2·0	0·9
1846 -	11,113	402	75	3·6	0·6	74,682	2,002	1,208	2·6	1·6
1847 -	11,429	337	22	2·9	0·1	67,950	880	78	1·2	0·1
1848 -	9,679	174	2	1·7	0·02	55,946	690	93	1·2	0·1
1849 -	9,559	245	26	2·5	0·2	50,030	610	104	1·2	0·2
1850-51 -	9,136	226	21	2·4	0·2	50,448	712	183	1·4	0·3
1851-52 -	9,119	216	15	2·3	0·1	49,881	658	202	1·3	0·4
1852-53 -	9,170	478	155	5·2	1·6	49,747	739	125	1·4	0·2
1853-54 -	8,291	324	61	3·9	0·7	47,887	944	284	1·9	0·5
1854-55 -	9,021	300	65	3·3	0·7	46,988	745	190	1·5	0·4
1855-56 -	7,599	200	11	2·6	0·1	47,938	690	59	1·4	0·1
1856-57 -	7,513	215	58	2·8	0·7	47,968	785	141	1·6	0·2
1857-58 -	9,396	385	112	4·09	1·1	47,902	1,072	177	2·2	0·3
1858-59 -	15,482	655	47	4·2	0·3	57,653	1,008	227	1·7	0·3
1859-60 -	16,921	463	99	2·7	0·5	60,750	1,047	260	1·7	0·4
9 Months 1860 -	10,741	205	36	1·9	0·3	35,401	524	107	1·4	0·3
1861 -	15,121	221	43	1·4	0·2	40,315	451	69	1·1	0·1
1862 -	13,920	238	49	1·7	0·3	33,551	321	83	0·9	0·2
1863 -	12,396	201	39	1·6	0·3	30,613	295	85	0·9	0·2
1864 -	13,280	268	36	2·01	0·27	29,708	381	116	1·2	0·3

* Vide Proceedings of Government, No. 1797, dated 27th May 1864.

RETURN showing the Number of Admissions and Deaths from Cholera among EUROPEAN TROOPS in the following Stations in the Madras Presidency during 1865.

STATIONS.	Average Strength.	Admissions.	Deaths.	STATIONS.	Average Strength.	Admissions.	Deaths.
1. Secunderabad - -	2,604	6	5	10. Thayetmyo - -	566	8	4
2. Bangalore - - -	2,310	5	5	11. Trichinopoly - -	273	-	-
3. Kamptee - - -	1,204	15	11	12. Palaveram - - -	247	-	-
4. Bellary - - -	1,166	18	9	13. Tonghoo (4 months)	159	-	-
5. Madras - - -	805	4	2	14. Singapore - - -	155	-	-
6. Cannanore - - -	771	1	1	15. Vizagapatam - - -	132	2	2
7. Rangoon (11 months)	754	-	-	16. Port Blair - - -	110	-	-
8. Wellington - - -	665	-	-	17. Malliaporam - - -	102	-	-
9. Saint Thomas' Mount	597	-	-	18. Calicut - - -	84	-	-

RETURN showing the Number of Admissions and Deaths from Cholera, among NATIVE TROOPS in the following Stations in the Madras Presidency during 1865.

STATIONS.	Average Strength.	Admissions.	Deaths.	STATIONS.	Average Strength.	Admissions.	Deaths.
1. Secunderabad - -	2,621	21	12	16. Samulcottah - -	704	1	1
2. Bangalore - - -	2,467	4	3	17. Mysore - - -	702	6	2
3. Madras - - -	2,254	19	8	18. Thayetmyoo - - -	688	1	-
4. Bellary - - -	1,904	11	4	19. Palamcottah - -	650	3	2
5. Kamptee - - -	1,662	37	20	20. Mercara - - -	635	-	-
6. Cannanore - - -	1,352	-	-	21. Hurryhur - - -	634	8	5
7. Trichinopoly - -	1,321	19	14	22. Moulmein - - -	628	1	-
8. Vizagapatam - -	935	3	1	23. Tonghoo - - -	574	-	-
9. Mangalore - - -	890	1	1	24. Singapore - - -	335	2	-
10. Rangoon - - -	824	-	-	25. Cuttack - - -	479	-	-
11. Cuddapah - - -	817	4	2	26. Kurnool - - -	468	3	-
12. Reipore - - -	760	8	3	27. Quilon - - -	384	5	1
13. Vellore - - -	736	-	-	28. Hoshungabad - -	382	9	3
14. Berhampore - -	706	5	2	29. Malacca - - -	187	-	-
15. Vizianagrum - -	715	2	2				

Question 11th.—What is the number, on an average, of the pilgrims who left India this year for Mecca; from what part did they start, and what was their sanitary condition at the time of starting?

(11.) There being no Mahomedan population in Southern India, no pilgrim ships ever proceed to Mecca from thence. On the Western Coast, however, a tribe of Moplals, who have mixed Mahomedan tenets, but are not zealots in that faith, occasionally proceed on pilgrimages. A few individuals only go at a time, taking with them

goods for sale, and take up their residence in Arabia for longer or shorter periods for commercial pursuits. Their numbers, however, are so few, and their movements so erratic, that no record of their departure out of the Presidency is officially observed by the authorities.

The Superintendent of Marine has furnished this Commission with the following list of vessels which proceeded to Jeddah with passengers during 1865:—

VESSELS.	Tons.	Number of Passengers.	Ports of Embarkation.	Destination.	Remarks.
Fathel Kareen or La Fayette	541	45	Atcheen -	Jeddah.	
		63	Alleppy -		
		21	Calicut -		
Iskander Shah - - -	777	25	Calcutta -	ditto.	
		30	Tellicherry -		
Fathel Ryman - - -	375	78	Atcheen -	ditto.	
		34	Calicut -		
Jadool Baree - - -	460	75	Tellicherry -	ditto.	
		30	Calcutta -		
Shelomith - - -	816	15	Tellicherry -	ditto.	

From

From this it is observed that only 238 persons embarked from ports in this Presidency, including 63 from Aleppy. This Commission have no direct evidence of the sanitary condition of these pilgrims at the time of starting; but as all these vessels have certificates granted them, in accordance with Act XXI. of 1858, they would not have been allowed to leave port unless the passengers were in a good state of health, and their condition on arrival at their destination could only be known to the authorities at Jeddah.

The Inspector General of Police informs this Commission that, during a long residence on the Western Coast, he never heard of a serious outbreak of cholera on board a pilgrim ship after leaving the ports of Malabar.

Further enquiries are being made, in communication with the collectors of districts on the West Coast under this head, and they will be forwarded, should it be thought desirable to do so.

They understand that the great stream of pilgrimages from British India proceeds from Bombay, from which place information on this point will be obtained.

It is from this port that pilgrims from the dominions of the Nizam and other Mahomedan rulers embark, and this Commission have applied to the Minister of His Highness to tender them such information as he has in his power on this subject.

But as this Report has already been kept back in expectation of the receipt of the information solicited, they are reluctant, under the circumstances noted in the Order of Government, regarding the expectation of receiving an early reply, to delay its transmission, as an addendum to this Report will be transmitted hereafter, should the intelligence received warrant it.

Question 12th.—What measures, in your opinion, should be resorted to in order to check the evil and to extirpate it, if possible, at its origin?

(12.) As already stated in paragraph 6, the Commission believe that one of the great sources of cholera in this Presidency is the vast assemblages of native devotees, which yearly take place at the various shrines of large towns, to celebrate festivals connected with their religious creed; and they consider that to check the evil, and to extirpate one great source at its origin, can only be attained by enforcing by legislative enactment, the strictest and most practical conservancy arrangements possible at these yearly gatherings.

Beyond pointing out the ordinary rules which are laid down for the conservancy of towns and communities, this Commission are not in a position to suggest how these regulations are to be enforced amongst a people living in independent states and other parts of the country, where any interference with their habits and customs, has, as a matter of policy, been always avoided by the authorities.

Such interference is never appreciated by the people themselves, and even the wealthier classes, if they can be induced at all to contribute funds towards conservancy arrangements, always do so grudgingly.

This Commission believe the Municipal Act will be attended with great good in all towns when thoroughly carried out, and will be the means of checking, to a great extent, outbreaks of this disease, and they think that much might be done by discouraging as much as possible these yearly congregations of natives.

They are aware of the many difficulties which encompass any effectual method proposed for checking this evil; but they believe that the only real remedy will be that which has been hinted at above; viz., to prevent by direct legislation the accumulation of the vast concourse of natives at the various cities and shrines throughout the country.

Once the disease has originated amongst these pilgrims, their natural remedy and the best for their own safety is dispersion, and in so doing the disease is distributed along the lines of roads into the villages and every cantonment through which they may have to pass, and tracts of country are thus rendered only passable to travellers with the greatest risk to their lives.

In order to still further check the evil caused by the diffusion of the germs of the disease, this Commission would suggest that measures should be instituted at the ports of embarkation by which the same restrictions now applicable to those embarking under the Emigration Act, should be adopted with regard to all classes to pilgrims.

The replies to questions conveyed in G. O. No. 178, dated 19th February 1866 are embodied in this letter.

In reply to further references by the Commission, the following letters were received and forwarded to Government in continuation of the report printed above:—

From the Collector of Malabar, dated 13th March 1866, to the Secretary to the Sanitary Commission, Madras.

“I have the honour, with reference to your letter, No. 807, dated 27th ultimo, regarding the number of Moplah pilgrims who annually leave for Arabia, to furnish you with the fullest information obtainable on the points indicated.

“1st. The number of pilgrims who leave the ports of Malabar for Arabia, taking an average of the last four years, is slightly over 500 annually. In some years the number is as large as 700 (and that from the single port of Calicut); sometimes it falls as low as 350.

“2nd. All pilgrims from this district proceed by sea direct to Jeddah, and it may be added, that on landing, the great majority travel by land to Mecca and Medina, while a few avail themselves of small coasting craft to proceed to the same places.

“3rd. During the year 1865, the number of pilgrims from the ports of Malabar was 596, of whom 502 sailed from Calicut.

“4th. The passengers were in all cases healthy on their departure, but next to nothing is known of them thereafter. As far as can be ascertained on inquiry, it would appear that cholera has not appeared on board the pilgrim ships. The pilgrims land, in most cases, in a healthy condition, but die occasionally in considerable numbers, of cholera, in the subsequent part of their journey.”

From the Superintendent of Marine, dated 16th March 1866, to the Secretary to the Sanitary Commission, Madras.

“Referring to the last paragraph of my letter of the 2nd instant, No. 947, I have the honour to annex supplementary list of vessels that left the Malabar Coast during the year 1865, with pilgrims for the Red Sea.

“2. The inhabitants of the Western Coast, when desirous of performing their pilgrimage, generally proceed to Bombay, embarking finally at that port for the Red Sea.”

Supplementary List of Vessels which proceeded to Jeddah with passengers during 1865 from the Malabar Coast, as per Returns received from the Masters Attendant and Conservators.

Vessels.	Tons.	No. of Passengers.	From	To	Remarks.
Teazer - -	363	210	Calicut - -	Jeddah -	All healthy when leaving the port.
Shah Allum -	498	150	Calcutta, touching at Cochin.	- ditto -	ditto - ditto.
Bhooj Nuggar -	442	85	Ditto -	- ditto -	ditto - ditto.

On the 17th of May (the constitution of the Commission having meanwhile been altered, as noticed already), the Sanitary Commissioner submitted the following letter to Government in modification of the Report of the late Sanitary Commission, dated 10th March.

“Having just received official intelligence from the Collector of Malabar of the great prevalence of cholera in his district during the year 1865, I beg to request that this information may be embodied in the Report prepared by the late Sanitary Commission in accordance with proceedings of Government* as per margin, and forwarded to the Commissioner of Sanitation, Bengal.

“The reply to No. 8 Question. ‘Was the cholera unusually violent this year?’ should be as follows:—

“No, with the exception of certain isolated outbreaks amongst the pilgrims visiting shrines, and a very severe epidemic which prevailed in the Malabar District on the western coast, there has been no general prevalence of cholera throughout the Presidency.

“The Collector of Malabar writes ‘cholera raged to an unusual and terrible extent during May, June, July especially) and August last year, and the number

of

* Public Department, No. 178, dated 19th February 1866.

of casualties when the epidemic was at its highest amounted in one month to 14,403. It was at first confined to only 3* taluks, but soon spread through all parts of the district except Wynaad. I am not aware of any peculiar features in its type. But the incidence of the epidemic was certainly remarkable in several localities that came under my personal observation.

* Calicut.
Ernad.
Wallawanad.

“It did not seem to affect especially places where dwellings were crowded, and the air likely to be tainted by accumulations of filth, but appeared equally prevalent and fatal amongst the inhabitants of the detached cottages throughout the country.”

On 16th October, Government referred to the Sanitary Commissioner the following despatch and accompanying report:—

“I forward, herewith, for your information, and for such publicity as you may consider necessary, three copies of conclusions arrived at by the British Cholera Commissioners upon the most important points relating to the propagation of the disease.”

(No. 21.)

The British Cholera Commissioners to the Earl of Clarendon.—(Received, June 6.)

“My Lord,

Constantinople, 25 May 1866.

“In our despatch, No. 20, of the 22nd instant, we informed your Lordship that the ‘Commission Plénier’ of the cholera conference, appointed to report upon the first and second groups of the programme had finished their labours, and that their report would be submitted to the Conference immediately after being printed.

“We should have deferred any further notice of the above-mentioned report until the Conference had decided upon it; but as we have observed in the public prints just received, that England is threatened with an invasion of cholera from neighbouring continental ports, and that some difference of opinion appears to exist as to the measures to be adopted, we think the emergency justifies us in departing from the ordinary course, and in forwarding at once to your Lordship the conclusions of the ‘Commission Plénier’ bearing upon the most important points of the propagation of the disease.

“We may observe that the ‘Commission,’ whose conclusions are embodied herein, is composed of three of the diplomatic and of all the medical delegates, comprising altogether 24 out of the 36 members of the Conference, and that with the exception of one medical delegate, who was absent on duty during the latter half of the discussions, the sense of the conclusions numbered 1 to 6 was unanimously adopted. We have reason to believe that the absent delegate would have voted with the rest of his colleagues. On the 7th there was some difference of opinion.

“The conclusions comprise the following points:—

“1st. That cholera is communicable from the diseased to the healthy.

“2nd. That it may be communicated—

(a.) By persons in the state of developed cholera;

(b.) By persons suffering from choleraic diarrhoea, who can move about, and who are apparently in health for some days during the progress of the disease.

“These last, from their passing unquestioned and unsuspected, are the most dangerous to the communities amongst whom they may move.

“3rd. That the discharges of those in a state of developed cholera, or in a state of choleraic diarrhoea become the chief means by which the cholera poison escapes from the system, and by mingling with air or water diffuses the disease.

“4th. The cholera may be transmitted by exposures of persons to the atmosphere of buildings, places, or vessels which have been occupied by cholera patients, and to the emanations from clothes, bedding, or other articles which have been in contact with diseased individuals, or which may have become soiled by their discharges.

“5th. That when infected articles or places are shut up and excluded from free air, they preserve their dangerous qualities for an indefinite length of time, and on the other hand, the freer the exposure to ventilation, the more rapidly they become innocuous.

“6th. That there is no reason to suppose that cholera is communicable by actual contact between individuals.

“7th. That the period of incubation, counting from the time of the reception of the poison to its manifestation in some form or other, is short. That the disease may show itself in two ways—*first*, by inducing fully developed cholera decidedly and rapidly; *secondly*, by producing slight disturbances, among which diarrhoea may be considered the chief, and which may sooner or later pass into some more or less decided choleraic mani-

festation. The 'Commission' consider that the incubation in the acute form is generally rapid, and that it seldom or never extends beyond a few days from the moment of infection. There was some difference of opinion as to the duration of choleraic diarrhœa, and as to the time that it may continue to be infectious, the great majority of the Commission considering that persons with diarrhœa which has lasted eight full days from the commencement of the period of observation, without showing any indications of a choleraic nature, may be excluded from the class of cholera patients. The minority think that the choleraic and infectious diarrhœa may last for several weeks.

"In mentioning the views of the Commission upon some of the most important points in the history of cholera, we beg to lay before your Lordship our own opinion of their practical bearing. We have little doubt that the Conference will recommend measures of restriction of intercourse between the sick and the healthy; but as it has not yet entered upon the measures to be taken, we must be considered as representing our own views only, in stating that we believe that it logically follows from the above conclusions, that if we wish to prevent the spread of cholera, or its introduction into places free from it, measures should be taken to restrain communication between those suffering from cholera and the healthy.

"Examples taken from the history of the present epidemic most strongly support the opinion of the great advantage of such measures. We may mention that Sicily and Greece completely escaped the disease which was raging around them in 1865. Sicily entirely cut herself off from all communication with diseased places. Greece caused all arrivals from infected localities to perform severe quarantine at four islands, Delos, Pondiconyssi (Salamis), Skiathos, and Vido, and held no intercourse with infected places.

"The good results of isolation in the cases of Sicily and Greece are hardly negatived by the examples of what occurred in other places said to be invaded in spite of restrictive measures. The quarantines enforced at Marseilles and some other ports of the Mediterranean were ineffective, either from their incompleteness, from their having been established too late, that is, after direct communication with infected ports had taken place.

"It seems to us that in the case of ships or passengers arriving from infected neighbouring ports, the following measures might advantageously be adopted:—

"1st. No person should be allowed to land previous to efficient inspection by medical men appointed for the duty.

"2nd. The healthy passengers should be removed from the ship, and isolated for a period, which need not exceed five days, at the end of which time they should be again inspected, and if found without choleraic symptoms, should receive pratique.

"3rd. All persons with cholera or diarrhœa at the time of arrival, or at any period of the detention, should be isolated from the rest, and removed to a separate place. Cases of diarrhœa should be retained under observation until the diarrhœa is cured, or until the medical officer in charge is satisfied, from the features of the disease, that it is not of choleraic nature.

"We think that the time of observation in such cases of diarrhœa should not be less than eight days from the commencement of seclusion.

"Persons having a medical certificate of being sufferers from chronic or symptomatic diarrhœa should follow the rule of the healthy, subject, however, to the discretion of the medical officer in charge.

"As the time occupied in the voyage between England and the neighbouring ports is short, we have not included it in the period of observation.

"We further think that the complete disinfection of the effects of persons coming from contaminated places should be insisted on, and that the period of isolation of the persons should be from the time that they are separated from their suspected property.

"All persons (including medical officers) employed in the Quarantine Department, who in any way come in contact with the ships, passengers, crews, or effects, that have arrived from contaminated places, should follow the same rules as the arrivals themselves.

"With respect to persons detained in the sick departments of the quarantine stations, the destruction or disinfection of all articles used by them should be imperative.

"The application of chemical disinfectants to the discharges, the disposal of these below the surface of the soil, if on shore, and beyond the possibility of contaminating water used for drinking purposes, are indispensable.

"The above measures would require the following conditions at each quarantine station:—

"1st. An establishment for the reception of the healthy, capable of completely isolating successive parties of arrivals in distinct classes, well separated from each other.

"2nd. An establishment for the reception of the sick, with an isolated convalescent establishment.

"Each of the above should be provided with latrines, having moveable receptacles, which should be daily emptied and purified.

"3rd. An establishment for the purification of effects.

"The

“ The establishments required would certainly be large, but a small number of them placed on a few points of the coast would suffice, if all ships carrying passengers from infected ports were made to pass through them before receiving free pratique.

“ We consider that islands lying at some distance from the coast would be the most desirable spots for the institution of quarantine stations. On these, wooden—or, still better, iron—constructions might be rapidly raised. In summer weather, isolated camps, with tents, might be formed.

“ In the event of islands not being available, it would be well to select some place on shore capable of complete isolation, and at a considerable distance from any inhabited quarter, or hulks moored at some distance from the land, but never within rivers. It will be obvious that several ships at each station would be necessary for the efficient working of the plans proposed.

“ The principle of isolation, adapted to special circumstances, should, we think, be carried out within the country when the disease has found a footing on shore.

“ We cannot too strongly urge the necessity of excluding from workhouses and general hospitals any forms of choleraic disease.

“ The sick poor should be cared for in special and isolated institutions.

“ We have based the suggestions which we have taken the liberty of submitting to your Lordship upon the supposition that all the agents employed shall be of an intelligent and upright class; that they shall be specially instructed to watch attentively, and without exciting their suspicion, the persons placed under observation, and report to the medical officers every visit made by anyone to the latrines. Without the aid of intelligent and trustworthy agents, it would hardly be possible to limit safely the period of observation to so short a time as above stated.

“ While convinced that all personal effects should be thoroughly disinfected, we do not think it necessary to extend the measure to mails or to ordinary merchandize.

“ At this distance, we forbear to enter into the question of the possibility of practically enforcing the foregoing measures for general passengers in the narrow seas, though, if applied, we do not doubt of their advantage in a medical point of view. We feel confident, however, that they could be readily carried out in the cases of masses of persons as in those of the German emigrants who conveyed the disease from Rotterdam to Liverpool.

“ We also abstain from entering into special details upon measures of restriction and matters of general hygiene, which we consider are none the less called for, because we hold the disease to be capable of transmission.

“ We, therefore, limit ourselves to repeating generally that, whatever other important measures are taken, among the most essential should be reckoned, at all times and in all places, those which recognize the possible communicability of the disease; the necessity of complete isolation of all choleraic patients from healthy individuals; the destruction or disinfection of all wearing apparel that may have been in any way contaminated by the sick; the complete disinfection, by chemical means, of all discharges derived from them; the evacuation, if possible, of contaminated ships and habitations of all kinds, and their complete purification.

“ We beg to observe that, while recognizing the communicability of cholera, we consider that, with due precautions as to ventilation, scrupulous cleanliness, and attention to the disposal of the clothes and other effects, and of the discharges of the sick, the patients can be handled without undue risk to those employed, and that, therefore, nursing in cholera is less dangerous than in some other contagious disease.

“ We are well aware that measures similar in character to those which we suggest have already been recommended by Dr. Budd and others. We do not, therefore, present them as new; but having had the honour of being appointed by your Lordship to attend the cholera conferences, the main object of which is to prevent the spread of the disease, and having been obliged, by the nature of our duties here, to direct special attention to all that relates to it, we hope that we shall not be considered as going beyond our province if, in this actual crisis, we add our voices to those who advocate restrictive measures, and state our conviction that these would be the most effective in their result if employed early with vigour and completeness.”

We have, &c.
(signed) *W. Stewart.*
E. Goodeve.
E. D. Dickson.

The following was received from Hyderabad in reply to letter from the President of the Sanitary Commission, requesting the information herein contained.

“ Read the following report on the number of deaths from cholera at Hyderabad, Aurungabad and Goolburgah, during the past five years, called for by the officiating president, Madras Sanitary Commission, in letter No. 746, dated 9th February, for communication to the Cholera Congress, Constantinople.

“ Acknowledges receipt of the minister's two letters giving cover to translation of a letter from the President of the Madras Sanitary Commission, requiring information as to the number of deaths from cholera, &c., for the past five years,

and states that from inquiries made, the mortality from this epidemic appears to have been as follows at Goolburgah :—

Inhabitants and pilgrims in -	Fuslee year.	No. of deaths.
- - - 1270 - -	- -	712
Ditto - - ditto - -	- - 1271 - -	64
Ditto - - ditto - -	- - 1272 - -	45
Ditto - - ditto - -	- - 1273 - -	-
Ditto - - ditto - -	- - 1274 - -	38

“The present population of Goolburgah including the Rozas, is nearly 13,153 souls, which may also be assumed as the average of the past five years.

“The number of pilgrims to Mecca from Goolburgah was as follows :—

In 1278 Hijri - - -	- - -	3
„ 1280 „ - - -	- - -	21
„ 1282 current year - - -	- - -	11

“At the anniversary of the death of Huzrut Khaja Bhunda Nawaz, an assemblage of from 15,000 to 20,000 persons takes place every year at Goolburgah; the gathering continues to increase from the 13th to the 17th Zikad, and decreases towards the end of the month.

“Again at the Jatra of the temple of Sarun Bosapa, which falls on the 20th of the month of Pholgaour, a concourse of from 40,000 to 50,000 people takes place, but notwithstanding such a large gathering, only 50 persons died from cholera in 1270 Fuslee among the pilgrims, which is a very small proportion. It is impossible to ascertain a monthly average of deaths from cholera. The pilgrimage to Mecca takes place in the months of Rujjub and Shaban, and the Oorus or anniversary festival in Zikad. The prevalence of cholera at this place appears to have been generally in the months of Showal and Zikad.”

MEMORANDUM.

Number of deaths from cholera in the city of Hyderabad, as reported by the Cutwall :—

In the Hijri year 1278 - - -	- - -	1,083
Ditto - - 1279 - - -	- - -	2,340
Ditto - - 1280 - - -	- - -	3,134
Ditto - - 1281 - - -	- - -	1,060
Ditto - - 1282 - - -	- - -	872
TOTAL - - -		8,489

MEMORANDUM.

Number of deaths from cholera at Aurungabad and its neighbourhood :—

For Fuslee year 1271 - - -	- - -	83
Ditto - - 1272 - - -	- - -	119
Ditto - - 1273 - - -	- - -	118
Ditto - - 1274 - - -	- - -	268
Ditto - - 1275 - - -	- - -	139
TOTAL - - -		727

[NOTE.—In consequence of the absence of the Commissioner on special duty in the districts of Bellary and Kurnool at the date of publication of the foregoing conclusions by the British Cholera Commissioners, no immediate action was taken thereon. But Government has since, during this year, at my suggestion, constituted a Committee to report on the arrangements which should be made in this Presidency for giving practical effect to the recommendations and suggestions of the British Cholera Commissioners.

(signed) R. S. E.]

Emigration
Depôts.

524. There are only two emigration depôts open at present in Madras, namely, those belonging to the Mauritius and Natal agencies.

The deficiency of accommodation at the Mauritius Depôt which has at times led to overcrowding, and the necessity of providing separate hospital accommodation for intending emigrants, when suffering from epidemic or contagious diseases, have been brought by me to the notice of the Government. Both these defects are about to be remedied, the Government having directed emigration agencies to provide additional sheds at the depôts, so as to secure intending emigrants from the evils of overcrowding, and small hospitals, for contagious and epidemic diseases, at a suitable distance from the depôt.

525. It

525. It would have been no less gratifying than interesting, if in this report there could have been included a series of tables showing the meteorological condition of some of the principal military stations, whose rates of sickness and mortality have been already shown, as by these we might be able to examine the peculiar and unusual atmospheric conditions to which the peninsula of India has been exposed during 1866. These have been chiefly, so far as we can judge from the one or two records which have been kept up, extreme and unusual heat and dryness of the air with a very late rainy season. At the Madras Observatory a maximum temperature of 110·6° F. was recorded on May 28th, which the Government Astronomer remarks "was the hottest and driest day on record at Madras."

"The wet bulb thermometer read 35·8° below the standard at 4 p.m., and the quantity of moisture in the air was only 16 per cent. of that required to saturate the atmosphere and produce rain. The thermometer reached above 106° F. on six days during the half month (May), the average maximum of past years being only 95° F. The greatest reading of a black bulb in *vacuo* was 155° F. on the 19th."

The following Meteorological Tables represent the climate of Madras for the past year, contrasted with a period of 20 previous years, from 1841 to 1861 :

1ST QUARTER.

	6 January.	13 January.	20 January.	27 January.	3 February.	10 February.	17 February.	24 February.	3 March.	10 March.	17 March.	24 March.	31 March.	Average.
Barometer reduced to 32° F. -	29·984	30·040	30·044	30·078	29·947	29·913	29·951	29·951	29·927	29·907	29·95	29·99	29·84	29·963
Mean maximum temperature	81·4	80·6	81·4	81·4	83·9	87·04	85·02	84·01	85·04	87·8	88·8	90·3	90·6	85·17
Mean minimum - ditto -	70·7	68·6	67·3	67·02	69·7	73·10	73·20	69·80	67·7	71·3	71·3	75·4	76·0	70·85
Mean temperature -	75·9	75·6	73·9	74·5	77·1	79·6	79·5	77·2	76·4	79·7	79·9	82·1	83·2	78·04
Mean humidity -	71·2	68·4	76·8	75·1	78·7	76·7	73·2	68·2	73·0	75·7	76·8	77·0	74·3	74·23
Prevailing wind -	N.E.byE.	N.E.byE.	N.E.	E.N.E.	S.E.byS.	S.E.byS.	S.E.byS.	E.byS.	S.E.byS.	S.S.E.	S.E.byS.	S.byE.	S.S.E.	S.E.byS.
Mean velocity in miles -	174·1	152·4	110·1	117·5	131·0	136·7	125·1	98·5	116·2	154·7	148·5	194·4	221·0	144·6
Rainfall -	-	-	-	-	-	0·03	-	-	-	-	-	-	-	0·03

TABLE showing the Mean Half-Monthly Metereological Condition of Madras for 20 Years past.

	Half-Month ending 15 January.	Half-Month ending 31 January.	Half-Month ending 14 February.	Half-Month ending 28 February.	Half-Month ending 15 March.	Half-Month ending 31 March.	Average.
Barometer reduced to 32° F. -	30·004	29·991	29·982	29·958	29·920	29·886	29·957
Mean maximum temperature	80·0	80·6	81·8	83·8	85·5	87·5	83·2
Mean minimum - ditto -	69·1	68·2	69·0	69·7	71·7	74·2	70·3
Mean temperature -	74·5	74·5	75·5	76·9	78·9	80·9	76·9
Mean humidity per cent. -	76	75	75	75	75	76	75
Prevailing wind -	N.E.	N.E. by E.	E.	E.S.E.	S.E.	S.S.E.	E. by S.
Mean velocity in miles -	158	126	134	129	137	150	139
Rainfall -	0·60	0·29	0·20	0·02	0·14	0·34	159

2ND QUARTER.

	7 April.	14 April.	21 April.	28 April.	5 May.	12 May.	19 May.	26 May.	2 June.	9 June.	16 June.	23 June.	30 June.	Average.
Barometer reduced to 32° F. -	29·821	29·787	29·844	29·894	29·782	29·681	29·713	29·701	29·681	29·706	29·649	29·701	29·734	29·745
Mean maximum temperature	91·3	94·9	93·6	93·2	95·3	101·8	102·1	97·6	105·5	102·05	102·4	99·1	101·7	98·81
Mean minimum - ditto -	77·9	79·6	79·6	80·3	80·1	82·4	82·5	82·7	83·8	84·05	84·1	82·4	83·6	81·77
Mean temperature -	84·4	86·3	85·8	86·3	86·8	90·3	89·5	89·2	91·9	91·1	90·6	88·4	90·08	88·51
Mean humidity -	74·8	71·0	72·8	73·7	71·7	61·5	63·7	68·0	56·7	55·8	48·5	55·5	51·5	63·4
Prevailing wind -	S.E.	S.S.E.	S.S.E.	S.S.E.	S.S.E.	S.	S.	S.	S.S.W.	S.	W.	W.S.W.	W. by S.	S.
Mean velocity in miles -	192·2	253·2	249·4	191·1	167·4	261·2	299·5	253·1	246·1	268·5	336·0	306·2	310·5	256·4
Rainfall -	-	-	-	-	0·08	-	-	-	-	-	0·016	0·16	0·03	0·286

TABLE showing the Mean Half-Monthly Meteorological Condition of Madras for 20 Years past.

	Half-Month ending 15 April.	Half-Month ending 30 April.	Half-Month ending 15 May.	Half-Month ending 31 May.	Half-Month ending 15 June.	Half-Month ending 30 June.	Average.
Barometer reduced to 32° F.	29.843	29.806	29.756	29.707	29.692	29.704	29.751
Mean maximum temperature	90.0	91.0	93.0	95.1	95.8	93.7	93.1
Mean minimum - ditto -	77.4	78.4	79.8	80.4	80.7	79.4	79.3
Mean temperature - - -	83.1	84.0	85.3	86.2	86.6	85.0	85.03
Mean humidity - - -	76	75	73	68	64	67	70.5
Prevailing wind - - -	S. by E.	S. by E.	S.	S.S.W.	S.W.	S.W.	S.W.
Mean velocity in miles -	173	175	201	218	230	235	205
Rainfall - - - -	0.16	0.65	1.32	1.60	0.92	0.51	5.16

3RD QUARTER.

	6 July.	13 July.	20 July.	27 July.	3 August.	10 August.	17 August.	24 August.	31 August.	7 September.	14 September.	21 September.	28 September.	Average.
Barometer reduced to 32° F.	29.753	29.686	29.714	29.704	29.737	29.807	29.734	29.745	29.756	29.782	29.752	29.761	29.809	29.749
Mean maximum temperature	100.9	98.3	97.7	96.8	91.9	95.5	97.0	92.5	91.5	89.0	94.7	94.3	92.7	94.8
Mean minimum - ditto -	82.8	82.7	80.3	80.9	78.8	78.6	80.3	76.4	77.5	77.9	79.2	79.4	78.7	79.5
Mean temperature - - -	88.6	88.4	87.0	85.7	83.7	85.1	86.5	83.4	83.4	82.7	85.6	85.3	84.7	85.4
Mean humidity - - -	59	54	66	66	64	66	65	75	75	73	67	70	72	67
Prevailing wind - - -	S.	S.W. by W.	S.S.W.	S.W.	W. by S.	S.W. by S.	S.W. by S.	S.W. by S.	S.W. by S.	W. by S.	S.W. by S.	S.W. by S.	S.	S.W. by S.
Mean velocity in miles -	245	302	247	216	228	222	246	160	176	193	203	188	143	213
Rainfall - - - -	-	0.18	0.41	0.83	0.07	0.70	0.17	2.35	0.93	0.69	0.79	0.84	-	7.96

TABLE showing the Mean Half-Monthly Meteorological Condition of Madras for 20 Years past.

	Half-Month ending 15 July.	Half-Month ending 31 July.	Half-Month ending 15 August.	Half-Month ending 31 August.	Half-Month ending 15 September.	Half-Month ending 30 September.	Average.
Barometer reduced to 32° F.	29.708	29.721	29.749	29.753	29.763	29.796	29.748
Mean maximum temperature	92.6	91.9	91.6	90.3	90.5	89.0	91.0
Mean minimum - ditto -	78.8	78.4	78.1	77.7	77.8	77.1	77.9
Mean temperature - - -	84.3	83.9	83.5	82.8	82.9	82.2	83.2
Mean humidity - - -	69	69	71	73	72	76	71
Prevailing wind - - -	S.W.	S.W. by W.	S.W. by S.	S.W.	S.W. by S.	S.S.W.	S.W.
Mean velocity in miles -	215	207	182	175	163	140	181
Rainfall - - - -	1.93	1.98	2.08	1.78	2.08	2.20	12.05

4TH QUARTER.

	5 October.	12 October.	19 October.	26 October.	2 November.	9 November.	16 November.	23 November.	30 November.	7 December.	14 December.	21 December.	28 December.	Average.
Barometer reduced to 32° F.	29.771	29.834	29.866	29.770	29.921	29.925	29.950	28.983	29.958	29.913	30.016	30.073	30.062	29.926
Mean maximum temperature	88.5	88.3	85.6	86.8	85.0	85.9	82.4	81.3	79.1	78.3	78.9	80.0	79.0	83.0
Mean minimum - ditto -	76.6	76.5	76.4	76.0	74.2	74.0	73.1	73.3	68.8	72.1	71.7	71.8	69.4	73.3
Mean temperature - - -	81.8	82.5	80.7	80.2	79.6	80.0	77.5	77.4	73.8	74.9	74.8	76.2	74.4	77.9
Mean humidity - - -	81	82	84	84	73	77	81	83	78	90	88	76	69	80.0
Prevailing wind - - -	S.W. by S.	S.	E.N.E.	W.N.W.	N.E. by N.	N.E. by N.	N.E.	N.E. by N.	N. by E.	N.E. by N.	N.N.E.	N.E. by E.	N.E. by N.	N.E. by N.
Mean velocity in miles -	127	116	92	83	157	161	169	160	174	211	204	201	250	161.9
Rainfall - - - -	2.71	1.02	4.42	0.62	0.08	-	7.64	2.55	1.74	17.95	2.59	0.89	0.37	3.54

TABLE showing the Mean Half-Monthly Meteorological Condition of Madras for 20 Years past.

	Half-Month ending 15 October.	Half-Month ending 31 October.	Half-Month ending 15 November.	Half-Month ending 30 November.	Half-Month ending 15 December.	Half-Month ending 31 December.	Average.
Barometer reduced to 32° F.	29.822	29.873	29.914	29.950	29.957	29.996	29.918
Mean maximum temperature	86.5	84.2	82.3	81.1	80.1	79.5	82.3
Mean minimum - ditto -	75.9	74.3	73.1	71.7	70.8	69.5	72.5
Mean temperature - - -	80.8	79.0	77.6	76.2	75.3	74.5	77.2
Mean humidity - - -	81	82	77	78	79	76	78
Prevailing wind - - -	S. by E.	N.E.	N.N.E.	N.N.E.	N.N.E.	N.N.E.	N.N.E.
Mean velocity in miles -	120	126	145	175	171	189	154.3
Rainfall - - - -	5.08	7.87	6.28	5.52	3.98	2.33	31.06

N.B.—The mean velocity of wind represents the average for six years only, from 1861 to 1866; and the rainfall is the average for 60 years, from 1803 to 1864 (missing 1808, 1809, 1810, 1812), when the results were very doubtful.

During the past year the late Madras Sanitary Commission proposed to Government a scheme for the recording of meteorological observations at each of our chief military and civil stations, which, owing to the warm support given to it by the local Government at Madras, has already received the sanction of the Governor General for its being carried out so soon as the necessary instruments shall have been procured and tested at the Madras Observatory.

The details of the scheme are fully entered into in the Report on this subject, which is entered in the Commission's Proceedings for April 1866, and it is only necessary to state that Meteorological Registers are to be kept up at the following stations under the Government astronomer.

Kamptee.	Tranquebar.	Rangoon.
Secuderabad.	Salem.	Tinnevely.
Vizagapatam.	Masulipatam.	Madura.
Bellary.	Cannanore.	Coimbatore.
Bangalore.	Trichinopoly.	Kurnool.
Negapatam, or	Wellington.	Cochin.

Native writers are being appointed to each of these stations, whose sole duties will be to record the necessary observations under the supervision of the senior medical officer at the station.

It is to be earnestly hoped that the Report for 1868 will show a set of meteorological tables, which will enable us to draw some conclusion as to the effect of the climate of this Presidency on the diseases of the country.

526. On the 7th June a copy of Captain Tulloch's project for the drainage of Madras was forwarded to the Sanitary Commissioner, who recorded thereon the following Minute, which was submitted to Government with the Proceedings for July 1866. Drainage of Madras.

"In his Report on a project for the drainage of the town of Madras, chapter III., Captain Tulloch has entered at considerable length on the question of dry earth conservancy.

"He has, I think, shown very conclusively that a system of dry earth conservancy, even if generally adopted in the town of Madras, would still leave untouched a great portion of the town sewerage, for dry earth conservancy deals only with excrementitious substances.

"This system will serve admirably in barracks, jails and hospitals, where the numbers of persons using latrines are limited. How far it can be used in public latrines, and at what cost, is still a matter for experiment. At all events the necessity for disposing of the other town sewerage by the execution of such works as those proposed by Captain Tulloch, remains unaffected by the more or less rapid adoption of dry earth conservancy by the natives of India.

"The experience I have acquired in this country, and information obtained during a recent visit to England, induce me to agree that dry conservancy is an expedient that is valuable only *until* a neighbourhood has a system of water supply and drainage.

"I also entirely agree in all that Captain Tulloch has said in his Report, regarding the utilization of sewage on land. I believe that the advocates of dry earth conservancy have greatly exaggerated the value of 'poudrette' as a fertilizing agent. In this respect it is very inferior to liquid sewage.

"It must be remembered that plants take their nourishment through their roots, and that the more diluted the sewage the more rapidly and effectually does it reach the delicate feeding apparatus of the plant.

"When in England last year I visited the Aldershott farm, where this agricultural improvement is tried on a large scale by Mr. Blackburn, who has applied the whole of the Aldershott camp sewage to a tract of barren heath of the worst description of soil.

"I saw a magnificent fourth crop of Italian rye-wheat growing on this land. I was engaged examining the work carried on during the greater part of a hot summer day.

"The camp sewage largely diluted was actually on the land, and there was not any offensive odour. Each day's sewage is in a few hours applied to the land, and I am satisfied that no one not previously informed of the fact would have known how these fields were watered.

"The same was the case at Worthing, where a company is applying the town sewage

sewage to land known as the "40 acres" in the immediate neighbourhood of the town. The principal precaution necessary is the dilution of the sewage, and that it should be applied without delay to the land where it becomes a fertilizing agent of immense power and without any dangerous influence on the health of the neighbourhood.

"It is moreover more than probable that before Captain Tulloch's scheme is perfected some cheap antiseptic will have been found in England which will deprive sewage of any dangerous properties even in a tropical climate.

"I think that the project of drainage for Madras should therefore keep in view the application of the sewage to the waste land which is available, and that this valuable substance should not be thrown into the sea.

"I do not venture to pass any opinion on the project itself, which has received so much careful attention from so competent an officer as Captain Tulloch, but venture to make one or two suggestions.

"I have had the advantage of meeting Mr. Rawlinson, the celebrated civil engineer, in England, and I gathered from him and from others conversant with this branch of engineering science, that recent experiments have shown in England that great reduction can be made in the size of sewers and pipe drains which greatly reduces the cost of town drainage without in any degree impairing its efficiency. I suggest, that before finally determining the important question of the dimensions of the sewers and earthenware pipes, it will be very desirable that Captain Tulloch should proceed to England and put himself in communication with Mr. Rawlinson, who is directing the drainage works of many important towns in the north of England. An inspection of these works would also give most valuable information of our difficulties which occur in the construction and repair of drainage works in towns in England can best be overcome.

"The best means of applying town sewage to land could also be studied. I am persuaded that Captain Tulloch would in a few months record notes invaluable to himself while directing the works in Madras, and which would serve as a manual to other engineer officers charged with similar works in other towns and stations of this Presidency.

"With great diffidence I would urge a reconsideration of the determination not to adopt the system of 'back drainage.' The extensive destruction of valuable property, supposed by Captain Tulloch is, I think, exaggerated as regards a considerable part of the town, and detailed observation may perhaps establish the fact that the slope is not so universally unfavourable to back drainage throughout Madras as is supposed.

"It must be remembered that wherever back drainage can be adopted, there will be a very large saving in the extent of drainage pipes, the cost of which falls directly on householders.

"I would further point out, page 106, that Captain Tulloch's scheme seems to be defective, inasmuch as it contemplates that urine only will be removed by the house-drain, while as regards fecal excrement, there will be a continuance of the present system by which all the ordure is removed first by hand to carts, and then carried to depôts which are sources of indescribable nuisance.

"Indeed, it will be necessary as a complement to Captain Tulloch's scheme, either to cut a canal for the removal of the filth by boats or to construct a tramway as has been done in Calcutta, for the removal of the filth and rubbish of the town to a safe distance.

"It appears to me that with a plentiful supply of water, the English system by which both urine and feces are removed by the drains, could be introduced into Madras. Captain Tulloch in page 107, contemplates the application of the dry earth system to dwellings, but it will be impossible to coerce natives into this, whereas with a plentiful supply of water and constant flushing of the house-pipes and sewers, there is no reason why the drainage of the town of Madras should not be similar to that of English towns.

"Captain Tulloch seems in the passage I have described, page 102, to be at variance with himself in pages 59 and 60, where he contemplates the feasibility of introducing water-closets.

"Mr. Fraser's report on the Madras Water-works, shows that there will be no difficulty as regards a supply of water not only for drinking and ablution purposes, but for flushing the drains.

"He

"He proposes to allow water at the rate of 20 gallons per head of the population per day, whereas in London the water used is 44 gallons. The quantity proposed by Mr. Fraser would amount to nearly 20 cubic yards of water. Allowing for waste, &c., Mr. Fraser proposes to store for the use of the town, 40,000,000 cubic yards.

"Mr. Fraser shows, however, that the River Cortiliar can supply a vast amount of more water than this estimated quantity, for at the site of the proposed dam, the average discharge during 30 or 40 days of the north-east monsoon within the last 10 years was between 400 and 500,000,000 of cubic yards, and he proposes to combine irrigation works with the water supply works, sufficient to redeem 25,000 acres of waste land.

"It is evident that there would be no difficulty in doubling the supply of water to the town, and in providing means for not only abundantly flushing the sewers of the town, but for the removal of excrement by the house-drains as is done in England. For to quote Captain Tulloch himself, 'Whatever may be said to the contrary that the system of conservancy is best, which provided it is not injurious to health, can dispense with the employment of men and women on duties which no human being should be called on to perform. Water-closets require no toties, and 40 men could easily look after all the sewers of Madras, but dry conservancy in Madras would require that 4,000 of the inhabitants should be engaged in one of the most disgusting of occupations.'

"Captain Tulloch's project is complete in itself, and independent of Mr. Fraser's scheme for the Madras water-works; I think this is to be regretted, and that the two projects should be united; that is, that water both for human consumption and for flushing the drains and sewers should be provided.

"Captain Tulloch depends on the water used for domestic purposes, 20 gallons per head, and to a system of numerous flushing (*vide* page 97) reservoirs fed by filtering wells for clearing its drains and sewers.

"These flushing reservoirs will occur at intervals of 100 yards, and it is expected that each apparatus will cleanse the sewer thoroughly up to that point in it where the next apparatus occurs.

"If, as is stated by Mr. Fraser, the River Cortiliar affords an abundant supply of water, I submit that it will be better to have a few thoroughly efficient reservoirs for flushing the town sewers, on which entire reliance can be placed than to depend on Captain Tulloch's numerous petty reservoirs fed by wells expensive in construction and liable in seasons of drought to become useless.

"I believe that Captain Tulloch felt himself precluded from uniting the two projects of a water supply and drainage for the town of Madras, and was therefore obliged to rely for flushing his drains and sewers on the water used by natives for domestic purposes, and on the numerous supplementary reservoirs indicated above.

"I would beg also to point out that it will be necessary to supplement Captain Tulloch's scheme for the drainage of the town, by providing means for removing the town filth and rubbish which will be excluded from the sewers.

"It will not be possible much longer to store masses of this rubbish and filth, as at present, at depôts such as those near Burghall's stables, near the Cochrane Canal, Basin Bridge, and on the south beach near Pycroft's road, and in the neighbourhood of the lunatic asylum.

"Cochrane's Canal and the South Coast Canal may be united, kept in good order, and boats of light draft might be used to remove this rubbish. In Calcutta and Bombay, this is done by means of railways, and if the project of uniting the canals is not undertaken, a tramway should be constructed for the removal to a distance from the town, of the contents of the municipal dust carts."

[NOTE.—The report of Captain Tulloch having received the mature consideration of Government, that officer was on 6th April 1867, ordered to proceed to England on duty for the purpose of "inspecting and studying the various modes of removing sewage, in successful operation throughout the larger towns of England or other countries, and of perfecting his acquaintance with the most recent and improved system not only of main, but of house sewage." Captain Tulloch was also "instructed to give his attention to the utilization of sewage by its application to the fertilization of land."]

Disinfection of
clothing, &c.

527. The following order regarding the disinfecting of clothing, &c., belonging to persons who have been exposed to or died from contagious diseases has been published in the order of the Commander in Chief. The rules were previously submitted to the Sanitary Commission for their approval.

“I. *Tents used as a Cholera Hospital.*—Tents occupied as cholera hospital should be disinfected by one or other of the following gaseous disinfectants, chlorine, nitrous acid, or sulphurous acid, and subjected to the action of boiling water or of steam when boiling, is not practicable, then pitched and exposed to the action of the sun and wind until thoroughly dried. The process of disinfection should be conducted before the return of the hospital tents to cantonments. If they have been used in cholera camps, and if they have been used in cantonments, it is desirable that they should be taken to some out of the way but airy spot outside cantonments, to undergo the process of washing subsequent to fumigation, which should be conducted before the tents are struck, wherever they may have been standing when in use.

“II. *Tents used as a Small pox Hospital.*—During the prevalence of an epidemic of small pox, or as long as fresh cases may be expected to occur, the tents should be disinfected on the spot each time that they are vacated, as directed in Rule I., and afterwards subjected to the action of boiling water, then pitched and exposed to the action of the sun and wind, and finally stored separately until required for the accommodation of small pox patients. When they are no longer required for this purpose, they should be destroyed in the presence of a responsible and trustworthy person.

“III. None but old tents, or those nearly unserviceable, should be used for the cover of small pox patients.

“IV. *Cots, Punkah-fringes, and Ropes.*—It is not necessary to destroy either the cots, punkah-fringes, or ropes, used in small pox and cholera hospitals when they can be immediately subjected to the prolonged action of boiling water, on the vacation of the buildings for their purification on the cessation of the epidemic in the case of small pox, or on the removal of the troops into camp in the case of cholera.

“V. Before being repainted, furniture should be subjected to the action of hot caustic lime-wash, which will destroy the organic matter with which it is brought into contact. It will only be expedient to burn wooden cots used by small pox patients, when their purification in boilers, like those used for destroying bugs in soldiers' cots, cannot be effected.

“VI. *Clothing being Private Property.*—All articles of clothing belonging to persons affected by contagious diseases, and worn at the time of their admission into hospital, shall, if practicable, be cleansed, by exposing them to the fumes of sulphur, ignited over a charcoal fire, after which the articles of clothing are to be boiled for from half an hour to an hour. They are subsequently to be exposed to the air and sun for two or three days, when they should be packed away for subsequent use.

“VII. If from the number of sick under treatment or any other certified cause, it may not be practicable to clean and disinfect the clothing in the manner prescribed, it must be destroyed by fire in the presence of a medical officer.

“VIII. Compensation will be allowed for clothing so destroyed, provided that it be shown that the expenditure was unavoidably required for the public safety. The Government will however require in each instance a full explanation of the circumstances making the destruction of the clothing necessary. But the destruction of bedding and body linen is really a question of time, for in any given cases, if their destruction can be safely deferred till a convenient opportunity offers, the ground for expediency has ceased to exist, and the destruction of the poison in the washerman's boiler can be effected without the sacrifice of the cloths. To destroy accumulations of good but infected bedding and clothing, when it would be equally easy to boil them as to burn them, would be wanton waste.

“IX. *Hospital*

“IX. *Hospital Bedding and Clothing*.—Hospital bedding and clothing used by patients affected with cholera and small pox, are to be purified whenever practicable, in the manner laid down in paragraph VI. Should, however, the number of patients under treatment render the instant purification of the clothing impracticable, it must be destroyed by fire in the presence of a medical officer, who will be required to certify to the necessity of the measure.

“X. *Mattresses*.—Coir mattresses should never be used for patients labouring under contagious maladies. Paillasses, stuffed with clean straw, are more easily cleaned, and if they have to be destroyed, they can be replaced at a comparatively slight expense.

“XI. In carrying out the foregoing orders, the Quartermasters General, the Ordnance and the Medical Departments, are to act in communication with each other; and no destruction of property is ever to take place without a full report of the same being forwarded from the officer commanding the station to the Commander in Chief, in whatever department the transaction may occur.

“XII. *Disinfectants*.—The following instructions by the General Board of Health for the preparation of chlorine gas, nitrous acid and sulphurous acid, are appended for general information :—

“Gaseous Disinfectants.”

“1st. Chlorine gas may be procured by mixing three parts (by weight) of binocide of manganese, with one part (by weight) of common salt. These should be placed in a large open vessel of glass or earthenware, capable of holding several times the quantity of the ingredients used, and acted upon by a mixture of two parts (by weight) of sulphuric acid (commonly known as oil of vitriol) and one part of water; or, one part (by weight) of the binocide of manganese may be mixed with two parts of hydrochloric acid (commonly called muriatic acid). The evolution of chlorine gas soon takes place, and will continue for some days, if the operation be left to the chemical action of the ingredients alone. The application of a gentle heat by means of a lamp or charcoal fire placed underneath the vessel, will facilitate the evolution of the gas, and complete the operation in a few hours. A vessel containing these ingredients should be placed in every room required to be disinfected, and the doors and windows must be carefully closed during the process.

“2nd. Nitrous acid, in the form of vapour has, in some instances, been successfully employed in checking the progress of fevers, and in disinfecting buildings and the interior of ships.

“This acid may be obtained by pouring half an ounce (by weight) of nitric acid over an equal quantity of copper turnings or the powder of starch. These quantities are sufficient to disinfect a room of 10 feet in each dimension; and it is advisable, in larger apartments to multiply the number of vessels rather than introduce larger quantities of the materials into one vessel, as the fumes given off might seriously affect the operator, who should retire as quickly as possible after the action has commenced. As in the case of chlorine, the rooms should be kept carefully closed for several hours.

“3rd. Sulphurous acid has also been found useful in arresting the progress of contagious disorders.

“This acid is produced in a gaseous form, when sulphur is burned in the air. It is also procured by heating sulphuric acid with copper filings, or powdered charcoal. For the purpose of disinfection, it may be prepared by melting one or two ounces of the flowers of sulphur or brimstone, in a pipkin or iron pot, and placing the vessel in the middle of the room to be disinfected. It should then be set on fire by means of a lighted match, and allowed to burn out. The same precautions should be observed, as in the cases of chlorine and nitrous fumes.”

Special Inspection,
Reports of Stations,
&c.

528. Special inspection reports of the following military and civil stations, copies of which are embodied in my monthly proceedings, were submitted to Government during the year :—

<i>Military.</i>	<i>Civil.</i>
Poonamallee.	Vellore.
Palaveram.	Bellary.
Vellore.	Kurnool.
Bellary.	
Kurnool.	

In addition to the foregoing concerning stations, detailed reports were submitted to Government regarding the lines of Native infantry regiments at Perambore, Royapooram, and Vepery (Madras), the Mauritius Emigration Depôt, Monegar Choultry, civil male and female orphan asylums (Madras), the gaols at Vellore, Chittoor, Kurnool and Bellary, and the police station and locks-up at the town of Kurnool, and generally through the whole Presidency, and upon a site for the Trichinopoly Gaol.

Water Supply to
Troops in Garrison
at Fort Saint
George.

529. On the 18th of August 1865, a report on Fort Saint George by the officiating President of the late Sanitary Commission was submitted, in which the following suggestions were made :—

1st. That care should be taken to collect the water falling upon the roofs of all the buildings in the fort, and to store it in tanks for use as drinking water by the troops.

2nd. That endeavour should be made to filter this water through sand and charcoal, before it reaches the well or reservoir from which it is to be pumped.

These suggestions were approved of by Government and the superintending engineer was accordingly directed to prepare plans and estimates for the necessary works, as well as to report on the mode in which he would propose to store the water in tanks, as also as to the quantity of water for which storage will be required.

The officiating President again addressed the Military Secretary to Government on the 13th April 1866, bringing to notice that no steps had been taken to remedy the impurity of the drinking water from the "Seven Wells" supplied to the troops in garrison at Fort Saint George and to the sick in the general hospital; that the wells may be cleaned out, a filtering medium around them introduced, and that borings for fresh springs be conducted, as the hot season is the most favourable for carrying out these suggestions, as well as on account of the increase of impurities in these wells. The above suggestions were again urged on the 13th June 1866, by the Sanitary Commissioner.

On the 16th June 1866, the Honourable Mr. Ellis, submitted for adoption by Government, a cheaper scheme by Captain Tulloch for purifying the water from the Seven Wells, in a manner a little different from that in which the same process had been conducted at Bangalore. It was proposed to construct an artificial filter bed of sand, two or three feet thick, on the surface of the ground, and to let the water flow on to this filter as it is lifted from the well by peccottahs. After the water had been filtered there, it was to be let into a small clear water basin, and then raised into the high level reservoir.

This suggestion was approved of as being preferable to the arrangements previously proposed, and a filtering cistern was accordingly ordered to be constructed without delay.

In a letter No. ³³⁰₆₂₂₅ dated 10th July 1866, from the Quartermaster General, the attention of Government was called to the remarks of the Committee appointed to report upon the quality of the water supplied to troops in Madras, to the effect that the water from the Seven Wells could not be filtered sufficiently to render it drinkable with impunity. But His Excellency the Com-
mander

mander in Chief not placing confidence in this verdict of the Committee, recommended that notwithstanding, a filter similar to that under construction at Bangalore, be erected.

530. The subject of supplying Madras with pure water, both for drinking and domestic purposes, has long engaged the attention of the local authorities, and many schemes have been submitted to Government with the view of gaining this end; the chief of them has been that prepared under the direction of Government by Colonel P. P. L. O'Connell. In this scheme it was "proposed to put an annicut or dam across the river Cortiliar some distance above the crossing of the Madras Railway, and three or four miles below the Kasaveram dam, which turns the surplus water of the Cortiliar into the Kuam river. The supply channel was, on its course to the Red Hill Lake, to supply eight tanks, and the surplus was to be stored for the supply of Madras, in the Red Hill Lake, which was to be raised nine feet. An open channel was to convey the water from the Red Hill Lake to two basins in Madras, where it was to be pumped up into settling reservoirs, filtered, and passed into the mains for distribution.

Water Supply for Madras.

Objections have been raised against this plan, and Mr. W. Fraser, C. E., has proposed that the extension of irrigation should be considered as a secondary object when compared with that for securing an ample water supply to Madras, and therefore suggested modifications and improvements which combined both the objects of irrigation and water supply.

The Government, in their Order in the P. W. D., No. 1,102, dated 11th April 1866, have approved of the modifications suggested by Mr. Fraser, as regards the site of the proposed annicut across the Cortiliar, its length, &c., to effect the object in view. But in consequence of the great distress that subsequently prevailed during the latter half of 1866, the Government were forced, in order to afford means of subsistence to the poor who flocked to the Presidency in search of work, to set aside their original intention of carrying out the project so as to make it immediately remunerative, by first constructing the annicut across the Cortiliar, and completing the channels from it to the Sholaveram Tank, and thence to the Red Hill Lake.

[NOTE.—The project for the water supply of Madras has been more diligently promoted since the end of last year. The works are now in a forward state, and it is hoped that by the end of 1868, the "Spur Tank" will receive an abundant supply of good water. The method to be adopted in its distribution is now engaging the attention of the Municipal Commissioners who have to undertake this branch of the project.—*R. S. E.*]

531. Early in 1865, the Superintending Engineer, 4th Division, submitted to the late Sanitary Commission certain plans for a lunatic asylum at Madras. These plans were examined by the Commission and generally disapproved. Owing to an accidental mislaying of the plans, the disposal of the subject was unavoidably delayed. This, however, was of little importance, as there was scarcely any prospect of funds being available even in the year 1866-67 for the erection of lunatic asylums. Government, however, considering it desirable that no further time should be lost in settling the plans and estimates, directed in their proceedings with Order dated 27th March 1866, that the superintending engineer should carefully consider and report upon the remarks of the Sanitary Commission and forward his observations with the papers and plan to the head of the Medical Department, who was ordered to transmit them to Government with his remarks.

Lunatic Asylum, Madras.

On the 22nd November the following Resolution by the Government of India was recorded by the Government of Madras. The plan proposed by the Government of India for general adoption was one prepared by the Bengal Sanitary Commission, and was accompanied by a detailed report regarding the principles of construction to be adopted.

The Resolution above noted was:—

"The Governor General in Council authorizes the adoption of the plan furnished by the Sanitary Commission for Bengal as a standard for lunatic asylums in India. The cost, however, should be kept as low as possible, and in this view, the huts or cottages for the lunatics should, where such a mode of construction is practicable, be simple Kutcha buildings, in which the use

“ of burnt bricks and lime should be strictly excluded. Rough timber should also be used generally for the roof framing.”

The Government of Madras referred the Resolution to the superintending engineer, who was requested to place himself in communication with the sanitary commissioner and the principal inspector-general, Medical Department, and to submit plans for the proposed asylum at Madras with reference to the plans of the Bengal Sanitary Commission.

[NOTE.—From some of the data of the Bengal Sanitary Commission, the authorities referred to above were compelled to dissent. Their views were confirmed and approved by the Government of Madras on 14 February 1867. The buildings, which are detached cottages, are now being erected. They are situated in a fine open park, with huge trees, and the institution will, when completed, be exceedingly well suited for the treatment of lunatics.—*R. S. E.*]

532. Orders have been issued by Government for the paving and draining of the ground round wells in military cantonments being carried out as soon as practicable.

This desirable sanitary arrangement was initiated by a communication from the Bombay Government with a view to the prevention of the pollution of the water of wells by the organic impurities caused by the watermen's bullocks and by persons bathing and washing clothes, and which sinking into the ground would be eventually carried into the well by the water.

Water so deteriorated has been thought to be a probable *nidus* for the development of guinea worm.

533. The Annual Report on Lock Hospitals for the year 1865, detailed more favourable results than for previous years. Under date the 8th of May, the Government recorded in their proceedings, that they concurred in the views of his Excellency the Commander-in-Chief that, wherever Madras troops were stationed, the control of prostitution should be regulated under the direction and supervision of the Madras Government and the late Sanitary Commission, in communication with the Chief Commissioner of Nagpore; but, under date the 13th of September, the Officiating Secretary to the Government of India in the Military Department, conveyed instructions to the Local Government, that the original rules prepared by the Government of India should be enforced at Kamptee, with such minor modifications as the Right Honourable the Governor of Madras may submit to the Chief Commissioner of Nagpore as being imperatively required. On the receipt of this order, which was communicated to me while on duty at Bellary, I submitted the following letter to Government, who transferred it for the consideration and orders of the Government of India. This report was prepared in communication with Mr. Robinson, Inspector General of the Mofussil Police, in concert with whom the regulations known as the Madras Rules on this subject were originally submitted by me:—

“I have the honour to acknowledge the receipt of the Order of Government, No. 3,504, dated 8th October 1866, giving cover to the rules framed under Section XIX. of Act XXII. of 1864 (subsequently amended by Act I. of 1865). These rules relate to the prevention of venereal disease among the European troops of Her Majesty's army in India.

“2. I would most respectfully solicit the consideration of the Government to the following remarks upon the rules, as applicable to cantonments in the Madras Presidency.

“The Inspector General of Police being here, the remarks I have now the honour to submit, have been prepared in consultation with that officer.

“3. The rules in question appear to us to contain all the most necessary provisions for the protection from disease of the British soldier in cantonment, and the modifications which we recommend are of a minor nature, such as would appear—in the Government Order of the 8th October 1866—to be contemplated, should the Commander-in-Chief of the Madras army consider any alterations necessary for this Presidency.

“4. We suppose that rules for coercing public prostitutes will at first only be applied for the protection of soldiers, leaving for the future the wider and more difficult question of applying any coercive measures for the protection of the health of the civil population.

“5. In paragraph 14 of the Simla Committee, it is proposed that every registered

Fouling of Well
Water in con-
nection with the
production of
Guinea Worm.

Lock Hospitals.

registersd prostitute should be made to contribute every month to the expense of the lock hospital, except while she may be under treatment.

"6. The Inspector General of Police and myself desire earnestly to deprecate this course. It would most certainly be misinterpreted, and the levy of any fee be viewed as a tax levied by the Government on prostitution: the fee, however small, would tend to discourage registration, and every effort would be made to evade the tax.

"7. We also respectfully urge a reconsideration of paragraph 19, in which it is recommended that the municipal and other local funds, at the disposal of the civil authorities, should bear a portion of the expense of the lock hospital.

"It is incorrect to state that generally in this Presidency, large towns have grown up round our cantonments. It would be more correct to state that our cantonments have been placed in close vicinity to large towns.

"The class of prostitutes frequented by our soldiers is completely distinct from the ordinary prostitution of our civil population, and we cannot help thinking that the people of every town and district are only indirectly interested in the prevention of venereal disease among our troops.

"8. Municipal taxation in this Presidency is in its infancy, and the charge of contributing to the support of a lock hospital, established mainly, if not entirely, for the benefit of the soldier, will be regarded with much disfavour by the municipalities. We believe, therefore, that it will be just and expedient that the cost entailed by the prevention of venereal disease among British troops should be borne by the State.

"9. We beg to object to the course laid down for observance in paragraph 17 of the Simla Commission's Report. According to this recommendation, the matron or dhaie attached to the lock hospital is held responsible for exercising a constant supervision over the health of the prostitutes in a military cantonment, even when they are not patients in the lock hospital. She is to be held responsible for exercising a constant supervision over the health of the women under her charge; for insisting upon the dwellings, persons, and clothes of the women being kept in a proper state of cleanliness; for immediately reporting to the cantonment magistrate or other authority the arrival, or departure, or change of residence of any prostitute; for collecting the women, when necessary, for medical inspection; and, generally, she is to be the medium of communication between the medical and other authorities and the women, for the efficient carrying out of the regulations that are laid down.

"Further, she is to be allowed to permit any woman under her supervision to be absent from medical inspection, on her certifying that such woman is temporarily unfit to appear.

"In short, to this dhaie, or matron, is to be entrusted the 'surveillance' of the prostitution in a military cantonment. Her salary is fixed at from 10 to 15 rupees per mensem.

"10. If she is to fulfil the onerous duties imposed upon her, she must be selected from the prostitute class, for no other woman would be found willing to frequent the houses of the lowest order of prostitutes; and without this she cannot do what is required of her.

"11. We venture to submit that this will destroy her influence as matron of a hospital, even if she is successful as a detective of concealed prostitution. There is no degradation in a woman performing the duty of tending the sick even among the unfortunate women who are the prostitutes frequented by soldiers. Her kindness and gentleness will give her enormous power of doing good and of reclaiming from sin. But we know in this Presidency, the kind of women that must be selected for the work described in paragraph 17.

"12. The system there laid down is well known in this Presidency as the *chowdrani system*. It has been repeatedly tried, and has always failed. The Dhaie or Chowdrani has always been able by intimidation and by concealing the names of prostitutes to realise a large income, and extortion and the increase of disease have been the invariable consequences of the course which it is proposed to re-introduce into the Presidency.

"The detection of concealed prostitution as connected with our troops, and the enforcement of the rules regarding registration and inspection of prostitutes must be left to the police, under necessary and severe restrictions. Appended

are the rules which the Inspector General of Police is of opinion should be observed. To carry this modification into effect rule 2 must be somewhat altered.

"13. This course has already been successfully carried out in the large military station of Bangalore, and the result has been an extraordinary reduction of venereal disease among the troops.

"A reference to Inspector General MacKenzie, and to Deputy Inspector General Inglis, will satisfy His Excellency the Commander in Chief of the correctness of this assertion.

"14. Latitude is left to the Local Government—*vide* paragraph 29 of the Simla Committee's report—and both the Inspector General of Police and myself trust that the question of the functions to be assigned to the dhaie or matron attached to lock hospitals, will be modified, as suggested by us. We observe that in the description of the duties of the matron or dhaie of lock hospitals, (*vide* Appendix to report of the Simla Committee) no mention is made of the detective functions described in paragraph 19 of the Simla Committee's report. In the description appended, of her duties, she is properly limited to the ordinary functions of a hospital matron.

"15. I entirely concur with the majority of the Simla Committee, that constant periodical inspection by qualified medical officers is essential, and, I trust that this will be impressed on the Cantonment Committee. Both Mr. Robinson and myself would venture to deprecate any punishment of soldiers by increased hospital stoppages as being certain to deter an early report of venereal disease which is essential to cure.

"16. We also think that it is not advisable to invest the officer in charge of the lock hospital with power to punish by fine, breaches of rules 16, 18 and 19. The utility of the lock hospital will in a great measure depend upon the kindness of treatment experienced there, and the confidence inspired among the ignorant and unfortunate women by the medical officer.

"The power of punishment for the breach of the rules should rest entirely with the cantonment magistrate.

"17. Should these remarks meet with the approval of his Excellency the Commander in Chief and the Government, the only alterations required in the rules will be the *alteration* of rule 2, and the *omission* of rules 13, 28 and 33; the limitation of the matron's duties as defined in the Appendix; and the exemption of municipal and local funds from bearing any portion of the expense of lock hospitals."

APPENDIX.

Rules for the guidance of the Police, prepared by the Inspector General of Police.

(*Vide* paragraph 12 of foregoing Letter.)

"1. THE district superintendent of police, or in his absence his assistant, shall be charged with the execution of the rules passed under section 19 of Act XXII of 1864.

"2. The inspector of police will be held responsible for seeing the rules enforced, and shall in person conduct all inquiries connected with this branch of sanitary police.

"3. An intelligent and respectable head constable will be attached on special duty to the lock hospital aided by a respectable first-class constable, and be under the general control of the medical officer.

"4. It will be the duty of the lock hospital head constable to see that the registered women attend for inspection according to roster; and when they fail to do so, to summon them to the hospital. In case of contumacious refusal to attend, he will apply to the magistrate for a written order to compel attendance. He will observe and report women suspected of clandestine prostitution. He will accompany the medical officer or other member of the lock hospital establishment when visiting the premises of registered females, and perform such other similar duty as may be imposed on him.

"5. It will be the duty of all police officers to report to the inspector or hospital

hospital head constable, all cases in which they may observe unregistered females soliciting, or any circumstance which may lead to suspicion that any irregular female is consorting with European soldiers, in order that a full inquiry may be made. But no police officer other than the inspector or hospital head constable shall speak to any such suspected persons or interfere with them.

"6. The inspector shall report within 24 hours any information he may receive, that any woman is consorting with European soldiers, either from the lock hospital authorities, the police, or from private sources, to the magistrate, and take his instructions.

"7. No police officer of any grade, except the inspector and hospital head constable, shall under any pretext whatever, interfere in this branch of sanitary police, unless he be specially detailed to observe and inquire into any particular case.

"8. A confidential copy of the register of prostitutes will be kept by the inspector."

534. In former annual reports, the success attending the precautionary measures carried out at my suggestion at the annual festival of Conjeveram has been recorded. I am happy to add that similar measures having been adopted at Conjeveram, and at Humpi under the personal inspection of Deputy Inspector General Jackson, were equally successful during the past year. As this subject will be fully reported when the results of the Cholera Committee's deliberations are published, I need not here further enter upon it. Native Festivals.

[NOTE.—I have great pleasure in adding that during the present year 1867, similar beneficial results have followed the adoption of the same sanitary arrangements as have before been recommended. We have now the experience of four consecutive years at Conjeveram and two at Humpi (until now the annual foci of epidemic cholera), and this certainly seems to justify a belief that under suitable restrictions, these congregations of people may cease to be, as until now, the almost certain centres radiating from which the cholera stream has diffused itself throughout the length and breadth of this Presidency.—*R. S. E.*]

535. The Conservancy, water supply, and general sanitary arrangements of this large building have continued to receive my anxious consideration. The details of the arrangements to be adopted on the completion of the hospital were made subjects of a special report under date the 2nd June, and these were approved by Government. General Hospital, Madras.

[NOTE.—During the present year the hospital having been fully completed was divided as suggested by me. The occupation of the different halves of the hospital by military and civil patients, respectively, was carried out on 1st May 1867, and ample accommodation is now afforded for both classes of patients; but the erection of a separate hospital for military patients only, has received, I am happy to say, the favourable consideration of Government. When this great public requirement is met, and when other civil medical institutions are merged into the general hospital, it will then present a school for clinical teaching, attached to the medical college, and under the control of some of its most experienced professors, which will, it is hoped, materially assist in the education of that very valuable branch of the service, the subordinate medical department.—*R. S. E.*]

536. Under the orders of Government, dated 31st July, I was directed to visit those parts of the districts of North Arcot, Salem and Coimbatore, where great distress had at that time prevailed; and I was instructed to offer suggestions to the local authorities with the view to the prevention of disease, and the effective organization of relief houses where such establishments might be required. Special employment of the Sanitary Commissioner.

I started on this duty on 9th August 1866, and on 21st September 1866, I submitted to Government, a report on these topics (*vide* Proceedings of Government in the Revenue Department, No. 2,737, dated 10th October 1866).

Under date the 25th September, I was ordered by Government to proceed to Bellary and Kurnool, to visit the most distressed parts of these districts, and to improve existing and initiate fresh arrangements for the relief of distress, for the employment of the able-bodied poor, and for the preservation of the public health.

I proceeded on this duty on the 30th September 1866, and having returned to Madras at the end of the month of November, I in the following month submitted detailed reports on the subjects indicated above. During this tour, I also specially reported on the means to be adopted for the relief of distressed ryots, and on the advisability of the retention of the town of Kurnool as a civil and military station.

Dry Earth
Conservancy.

537. In the early part of 1865, a pamphlet was submitted to Government by the late Sanitary Commission containing the results of a series of experiments regarding the value of dry earth as a deodoriser. In June 1866, the dry earth system of Conservancy was ordered to be introduced into the European regimental latrines at Fort St. George and into those of the 2nd Battalion, 21st Regiment, at Secunderabad, with a view of ascertaining its applicability and cost in European regiments in this Presidency. A latrine adapted to the dry earth system was also constructed last year for the use of the Native regiment stationed at Vepery; but the experimental trial of this system, both in this and in the European regimental latrines in the fort, was not commenced till some months after the beginning of the current year, in consequence of the delay which had taken place in the supply of Pug Mills—appliances which are considered essentials for the proper working of the dry earth system. This experiment having therefore been for a short time only under trial, no details as to its results can now be furnished; but from what has hitherto been observed in the regimental latrine at Vepery, the effect has been most satisfactory, there having been no serious difficulty experienced in enforcing the system, from the fact of the Sepoys themselves being, apparently, much in its favour.

This system of conservancy has also been generally introduced into the gaols, hospitals, and other public institutions of the Presidency, and wherever the rules laid down for the proper carrying out of the system have been observed, it has always proved successful. The only objection to the system of conservancy is the difficulty and cost of procuring dry earth and of its removal when converted into poudrette.

I have, &c.
(signed) *R. S. Ellis*,
Sanitary Commissioner for Madras.

A P P E N D I X.

ANNUAL STATIONAL RETURNS of the EUROPEAN and NATIVE ARMY, and of the GAOL POPULATION of the MADRAS PRESIDENCY; also the MORTUARY RETURNS of the CIVIL POPULATION, for the Year 1866, compiled and systematically arranged from Original Documents by *W. Arnold Smith*, M. D., Assistant Surgeon, Madras Medical Service, Officiating Secretary to the Sanitary Commissioner for Madras.

P R E F A C E.

The Tables herein included consist of—

- 1st. The Vital Statistics of the European and Native Army serving in the eight grand army divisions of the Madras Presidency during 1866.
- 2nd. The Sickness and Mortality of each Military Station in the Madras Presidency during 1866, European and Native Troops being separately shown.
- 3rd. The Sickness and Mortality of the Gaol Population for 1866.
- 4th. The Mortuary Returns of the Civil Population.
- 5th. The general Sickness and Mortality of the European and Native Army serving in the eight grand divisions of the Madras Presidency for six years, 1860–1865; also the Prevalence of Special Diseases.

The sources from which the above information has been obtained are as follows:—

The general Tables of the Sickness and Mortality of the European Army have been compiled from the Quarterly Divisional Army Medical Returns.

The Stational Returns from Special Weekly Reports prepared by the Senior Medical Officer at each Station of the Army for the information of the Sanitary Commissioner.

The Gaol Returns from information received from the Inspector General of Gaols.

The District Mortuary Tables from Monthly Returns received by the Sanitary Commissioner from the different Collectorates in the Madras Presidency.

I N D E X.

EUROPEAN ARMY RETURNS.

	<i>Page.</i>
I. Table showing Increase and Decrease among the British Troops serving in the Madras Presidency during the year 1866 - - - - -	164
II. Table showing the Sickness and Mortality among the European Troops serving in the Madras Presidency during the year 1866, and the prevalence of the Principal Diseases in each quarter of the year - - - - -	165

DIVISIONAL RETURNS.

I. Table showing the Sickness and Mortality among the European Troops serving in the Centre Division during the year 1866, and the prevalence of the Principal Diseases in each quarter of the year - - - - -	166
II. Ditto - - ditto - - ditto - - Southern Division - - - - -	167
III. Ditto - - ditto - - ditto - - Mysore Division - - - - -	168
IV. Ditto - - ditto - - ditto - - Ceded Districts - - - - -	169
V. Ditto - - ditto - - ditto - - Northern Division - - - - -	170
VI. Ditto - - ditto - - ditto - - Hyderabad Subsidiary Force - - - - -	171
VII. Ditto - - ditto - - ditto - - Nagpore Force - - - - -	172
VIII. Ditto - - ditto - - ditto - - Pegu Division - - - - -	173

STATIONAL RETURNS.

	Page.
I. Table showing Sickness and Mortality at each Station, arranged according to strength	174
II. Table showing Admissions and Deaths under different Classes of Diseases	174
III. Table showing Admissions and Deaths under different Orders of Diseases	175
IV. Table showing Admissions from Principal Diseases	176
V. Table showing Deaths from Principal Diseases	176
VI. Table showing the Ratio of Admissions, Daily sick, and Mortality per 1,000 at each Station of Strength	177
VII. Table showing Ratio of Admissions and Deaths per 1,000 under different Classes of Diseases	177
VIII. Table showing Ratio of Admissions per 1,000 from Principal Diseases	178
IX. Table showing Ratio of Deaths per 1,000 from Principal Diseases	178
X. Table showing Admissions and Deaths from Special Diseases during 1st Quarter at each Station	179
XI. Ditto - - ditto - - ditto - - 2nd Quarter at each Station	179
XII. Ditto - - ditto - - ditto - - 3rd Quarter at each Station	180
XIII. Ditto - - ditto - - ditto - - 4th Quarter at each Station	180

NATIVE ARMY RETURNS.

I. Table showing Increase and Decrease among the Native Troops serving in the Madras Presidency, during the year 1866	181
II. Table showing the Sickness and Mortality among the Native Troops serving in the Madras Presidency during the year 1866, and the prevalence of the Principal Diseases in each Quarter of the Year	182

DIVISIONAL RETURNS.

I. Table showing the Sickness and Mortality among the Native Troops serving in the Centre Division during the year 1866, and the prevalence of the Principal Diseases in each Quarter of the year	183
II. Ditto - - ditto - - ditto - - Southern Division	184
III. Ditto - - ditto - - ditto - - Mysore Division	185
IV. Ditto - - ditto - - ditto - - Ceded Districts	186
V. Ditto - - ditto - - ditto - - Northern Division	187
VI. Ditto - - ditto - - ditto - - Hyderabad Subsidiary Force	188
VII. Ditto - - ditto - - ditto - - Nagpore Force	189
VIII. Ditto - - ditto - - ditto - - Pegu Division	190

STATIONAL RETURNS.

I. Table showing Sickness and Mortality at each Station arranged according to Strength	191
II. Table showing Admissions and Deaths under different Classes of Diseases	192
III. Table showing Admissions and Deaths under different Orders of Diseases	193
IV. Table showing Admissions from Principal Diseases	194
V. Table showing Deaths from Principal Diseases	195
VI. Table showing the Ratio of Admissions, Daily Sick, and Mortality per 1,000 of Strength at each Station	196
VII. Table showing Ratio of Admissions and Deaths per 1,000 under different Classes of Diseases	197
VIII. Table showing Ratio of Admissions per 1,000 from Principal Diseases	198
IX. Table showing Deaths per 1,000 from Principal Diseases	199
X. Table showing Admissions and Deaths from Special Diseases during 1st Quarter	200
XI. Ditto - - - ditto - - - ditto - - 2nd Quarter	201
XII. Ditto - - - ditto - - - ditto - - 3rd Quarter	202
XIII. Ditto - - - ditto - - - ditto - - 4th Quarter	203

GAOL RETURNS.

I. Table showing the Sickness and Mortality among the Gaol Population of the Madras Presidency	204
II. Table showing the Principal Diseases which have contributed to make up the Admissions into Hospital during the year 1866	205
III. Table showing the Principal Diseases which have contributed to make up the Deaths in Hospital during the year 1866	206
IV. Table showing the Ratio of Admissions, Daily Average, Sick and Mortality, per 1,000 of Strength	207

GAOL RETURNS—*continued.*

	Page.
V. Table showing the Ratio of Admissions per 1,000 from the Principal Diseases admitted into Hospital - - - - -	208
VI. Table showing the Ratio of Deaths per 1,000 from the Principal Diseases admitted into Hospital - - - - -	209
VII. Table showing the Average Mortality and Sickness in Gaols for five years, from 1861 to 1865 - - - - -	210

DISTRICT MORTUARY RETURNS.

I. General District Mortuary Statement - - - - -	211
II. Ganjam Collectorate - - - - -	212
III. Ganjam Zemindary - - - - -	212
IV. Vizagapatam Collectorate - - - - -	213
V. Godavery Collectorate - - - - -	213
VI. Godavery Zemindary - - - - -	214
VII. Kistna Collectorate - - - - -	214
VIII. Nellore Collectorate - - - - -	215
IX. Nellore Zemindary - - - - -	215
X. Cuddapah Collectorate - - - - -	216
XI. Bellary Collectorate - - - - -	216
XII. Kurnool Collectorate - - - - -	217
XIII. Madras Collectorate - - - - -	217
XIV. North Arcot Collectorate - - - - -	218
XV. South Arcot Collectorate - - - - -	218
XVI. Tanjore Collectorate - - - - -	219
XVII. Trichinopoly Collectorate - - - - -	219
XVIII. Madura Collectorate - - - - -	220
XIX. Ramnad Zemindary (Madura) - - - - -	220
XX. Tinnevely Collectorate - - - - -	221
XXI. Coimbatore Collectorate - - - - -	221
XXII. Salem Collectorate - - - - -	222
XXIII. South Canara Collectorate - - - - -	222
XXIV. Malabar Collectorate - - - - -	223

SICKNESS AND MORTALITY IN THE EUROPEAN AND NATIVE ARMY,
FROM 1860 to 1865.

I. Table showing the Sickness and Mortality amongst the European Troops serving in the Eight Divisions of the Madras Presidency, from 1860 to 1865 inclusive - - - - -	224
II. Table showing the Sickness and Mortality amongst the European Troops serving in the Centre, Southern and Mysore Divisions, and Ceded Districts - - - - -	225
III. Table showing the Sickness and Mortality amongst the European Troops serving in the Northern Division, Hyderabad Subsidiary Force, Nagpore Force, and Pegu Division - - - - -	226
IV. Table showing the Sickness and Mortality amongst the Native Troops serving in the Eight Divisions of the Madras Presidency, from 1860 to 1865 inclusive - - - - -	227
V. Table showing the Sickness and Mortality amongst the Native Troops serving in the Centre, Southern and Mysore Divisions, and Ceded Districts - - - - -	228
VI. Table showing the Sickness and Mortality amongst the Native Troops serving in the Northern Division, Hyderabad Subsidiary Force, Nagpore Force, and Pegu Division - - - - -	229

EUROPEAN ARMY RETURNS.

I. —TABLE showing INCREASE and DECREASE among the BRITISH TROOPS serving in the MADRAS PRESIDENCY, during the year 1866.

	Effective.	Unattached.	Total.	Effective.	Unattached.	Total.
Strength on 1st January 1866 - - - -	- -	- -	- -	13,946	338	14,284
INCREASE.						
Recruited in India - - - - -	38	- -	38			
Drafted or transferred from England or Colonies	123	- -	123			
Transfers received (between Corps in India) -	233	- -	*233			
Joined from desertion - - - - -	3	- -	3			
Total Increase - - - -	- -	- -	- -	397	- -	397
* Exclusive of Eight remanded from Unattached List.				14,343	338	14,681
DECREASE.						
Time expired - - - - -	255	1	256			
Invalided for discharge and for change of climate.	753	19	772			
Discharged by purchase - - - - -	33	- -	33			
Ditto - by Court Martial - - - -	3	- -	3			
Ditto - otherwise - - - - -	33	3	36			
Deserted - - - - -	27	- -	27			
Transfers given (between Corps in India) -	†922	- -	†922			
Transferred from the Unattached List to the Warrant Grade on promotion.	- -	10	10			
Transferred on duty to England or Colonies -	13	- -	13			
Embarked for England or Colonies 1 and 2 Batteries 17th Brigade, 1st Dragoon Guards, and 1-18th Foot.	1,002	- -	1,002			
Died - - - - -	251	11	262			
Total Decrease - - - -				3,292	44	3,336
				11,051	294	11,345
REVERSIONS.						
Transferred from effectives to Unattached List - - - - -	- -	- -	- -	58		
Remanded from Unattached List to effectives - - - - -	- -	- -	- -	8		
Difference to add to Unattached List to deduct from effectives - - - -	- -	- -	- -	50	+50	- -
Strength on 1st January 1867 - - - - -	- -	- -	- -	11,001	344	11,345

† Inclusive of 799 men of the 105th Foot, transferred to Bengal Presidency.

‡ Exclusive of 58 to Unattached List.

II.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the MADRAS PRESIDENCY, during the year 1866, and the prevalence of the Principal Diseases in each Quarter of the year.*

QUARTERS.	ADMISSIONS INTO HOSPITAL.															DEATHS.															Average Strength.	Total Admissions.	Average Daily Sick.	PER MILE OF STRENGTH.			QUARTERS.	DEATHS IN AND OUT OF HOSPITAL.															All other causes.
	Small-pox.	Ophthalmia.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Inter-mittent.	Febris Re-mittent.	Febris Typhoid.	Febris Cont.	Rheumatism.	Venereal Diseases.	Phtisis Pulm.	Diphtheria.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Abscess and Ulcers. (a)	Atrophy and Anæmia.	Wounds and accidents.	All other causes.																															
																							In Hospital.	Out of Hospital.	Invalided.																												
1st Quarter	2	71	204	79	245	10	268	18	3	143	159	781	36	13	59	148	143	106	382	59	333	693																															
2nd "	3	91	131	65	237	4	286	56	1	331	136	680	24	5	61	172	99	86	406	54	287	718																															
3rd "	4	137	327	89	407	18	379	52	3	493	146	584	33	12	78	136	86	131	312	92	287	747																															
4th "	1	135	228	79	269	13	460	21	1	191	129	579	42	8	51	185	108	105	220	60	282	686																															
For the year	9	434	900	312	1,158	45	1,393	147	7	1,158	570	2,624	135	38	240	641	436	428	1,320	265	1,179	2,844																															
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																																					
For the Year														0.8	38.8	80.5	27.9	103.5	4.0	124.6	13.1	0.6	103.5	50.9	234.7	12.0	3.3	21.4	57.3	39.0	38.2	118.0	23.7	105.4	254.4																		
QUARTERS.	PER MILE OF STRENGTH.				DEATHS.			Daily Sick.	Admissions.	DEATHS IN AND OUT OF HOSPITAL.										Small-pox.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Inter-mittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Phtisis Pulmonalis.	Diphtheria.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Atrophy and Anæmia.	Wounds and accidents. (b)	Insolatio.	All other causes.															
	In Hos-pital.	Out of Hospital.	Invalided.	In Hos-pital.	Out of Hospital.																																																
1st Quarter	-	-	-	56.9	324.1	56.9	3.7	0.4	1.9	-	4	1	2	2	1	4	1	4	2	2	6	2	3	2	-	13																											
2nd "	-	-	-	68.3	351.6	68.3	4.2	0.4	4.6	-	2	1	-	-	3	5	-	3	-	4	4	3	1	1	12	10																											
3rd "	-	-	-	76.3	419.5	76.3	6.6	0.2	2.7	3	15	1	1	1	5	4	1	5	1	4	4	3	1	2	5																												
4th "	-	-	-	72.2	366.3	72.2	5.8	0.4	8.2	4	7	5	1	1	1	7	2	1	3	6	6	6	-	4	6																												
For the Year	-	-	-	68.1	1456.5	68.1	20.3	1.6	17.2	7	28	8	4	4	4	10	20	3	13	6	20	14	5	9	13	34																											
DEATHS PER THOUSAND OF AVERAGE STRENGTH.																																																					
For the year														0.1	2.7	1.2	0.6	2.5	0.7	0.3	0.3	0.8	1.7	0.2	1.1	0.5	1.7	1.2	0.4	0.3	1.1	3.0																					

* Not including detachments serving in Port Blair and the Straits.

(a) Including Furunculus.

(b) Exclusive of Insolatio.

II.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the SOUTHERN DIVISION, during the Year 1866, and the prevalence of the Principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.										DEATHS.		Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		PER MILLE OF STRENGTH.	DEATHS IN AND OUT OF HOSPITAL.															DEATHS PER THOUSAND OF AVERAGE STRENGTH.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Small-pox.	Ophthalmia.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Rheumatism.	Veneral Diseases.				Phthisis Pulm.	Delirium Tremens.		Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Abscess and Ulcers. (a)	Atrophy and Anæmia.	Wounds and Accidents.	All other causes.	Small-pox.	In Hospital.	Out of Hospital.	Invalided.	Admissions.	Daily Sick.	In Hospital.	Out of Hospital.	Invalided.	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year	For the Year

IV.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the CEDED DISTRICTS, during the Year 1866, and the prevalence of the Principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.										DEATHS IN AND OUT OF HOSPITAL.																DEATHS PER THOUSAND OF AVERAGE STRENGTH.									
	Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	Small-pox.	Ophthalmia.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Rheumatism.	Venereal Diseases.	Phtisis Pulm.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Abscess and Ulcers. (a.)	Atrophia and Anæmia.	Wounds and Accidents.	All other Causes.								
				In Hospital.	Out of Hospital.																															
1st Quarter -	1,040	379	52.2	1	-	-	16	9	2	48	-	6	1	1	1	18	10	70	2	-	3	21	10	2	37	8	27	88								
2nd " -	875	413	75.1	2	-	-	34	11	-	46	-	16	-	-	-	34	15	58	-	-	5	30	5	3	41	4	20	89								
3rd " -	856	458	84.6	4	-	-	38	40	15	48	-	6	-	-	-	18	13	55	6	1	-	26	11	6	37	4	23	111								
4th " -	819	346	83.9	2	-	50	32	15	7	28	1	45	-	-	-	26	12	30	5	1	-	12	2	5	29	3	14	73								
For the Year - -	808	1,596	73.9	9	-	50	120	75	26	170	1	73	1	1	1	96	50	219	13	2	8	89	28	16	144	19	84	361								
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																				
For the Year - - -										133.6	83.5	28.9	189.3	1.1	81.2	1.1	1.1	106.9	55.5	243.8	14.4	2.2	8.9	99.1	31.1	17.8	100.0	21.1	93.5	403.1						
QUARTERS.	PER MILE OF STRENGTH.					DEATHS IN AND OUT OF HOSPITAL.																														
	Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Typhoid.	Phtisis Pulmonalis.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Atrophia and Anæmia.	Wounds and Accidents. (b.)	Insolatio.	All other Causes.											
			In Hospital.	Out of Hospital.																																
1st Quarter -	364.4	50.1	0.9	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
2nd " -	472.0	85.8	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-								
3rd " -	184.5	98.8	4.6	-	-	-	-	1	1	1	1	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-								
4th " -	422.7	102.4	2.4	-	61.0	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-								
For the Year - - -	1777.2	82.2	10.0	-	55.6	-	-	1	2	-	-	-	-	1	-	-	-	2	-	-	1	1	-	-	-	-	-	-								
DEATHS PER THOUSAND OF AVERAGE STRENGTH.																																				
For the Year - - -										-	1.1	2.2	-	-	-	1.1	-	-	2.2	-	1.1	1.1	-	-	-	-	-	-	-							
(a) Including Furunculæ.																																				
(b) Exclusive of Insolatio.																																				

VI.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the HYDERABAD SUBSIDIARY FORCE during the Year 1866, and the prevalence of the principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.				DEATHS IN AND OUT OF HOSPITAL.																																				
	Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	PER MILLE OF STRENGTH.														DEATHS PER THOUSAND OF AVERAGE STRENGTH.																				
				In Hospital.	Out of Hospital.		Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Rheumatism.	Veneral Diseases.	Phthisis Pulm.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Abscesses and Ulcers (a).	Atrophia and Anæmia.	Wounds and Accidents.	All other causes.									
1st Quarter	-	2,788	108.2	11	-	-	-	-	-	0.7	28.7	169.4	18.7	129.7	5.2	100.5	13.4	1.1	118.5	55.7	242.7	8.6	3.3	24.6	40.3	62.8	20.9	113.6	25.0	112.1	210.9										
2nd "	-	2,690	206.9	17	-	1	-	7	46	5	37	1	55	18	-	103	29	196	5	2	16	24	26	10	89	13	79	116													
3rd "	-	2,653	218.0	31	3	-	2	19	182	8	169	8	70	16	1	121	44	143	7	4	16	-	24	18	79	15	76	167													
4th "	-	2,565	222.2	25	-	-	-	40	151	16	114	4	118	1	-	75	43	124	7	-	19	68	64	20	47	27	68	168													
For the Year	-	2,674	203.8	84	3	1	2	77	453	50	347	14	293	36	3	317	149	649	23	9	66	108	168	56	304	67	300	564													
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																									
For the Year															-	-	-	-	-	0.7	28.7	169.4	18.7	129.7	5.2	100.5	13.4	1.1	118.5	55.7	242.7	8.6	3.3	24.6	40.3	62.8	20.9	113.6	25.0	112.1	210.9
QUARTERS.	PER MILLE OF STRENGTH.				DEATHS IN AND OUT OF HOSPITAL.																																				
	Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Typhoid.	Febris Cont.	Phthisis Pulmonalis.	Delirium Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Atrophia and Anæmia.	Wounds and Accidents (b).	Insolatio.	All other causes.																	
			In Hos-pital.	Out of Hospital.																																					
1st Quarter	-	292.3	60.3	3.9	-	-	-	-	-	1	2	-	-	-	-	3	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-									
2nd "	-	326.0	76.9	6.3	-	0.3	-	2	1	-	1	-	-	-	-	-	-	-	2	2	-	-	7	2	-	-	-	-	-	-	-	-									
3rd "	-	448.1	82.1	11.6	1.1	-	1	9	-	3	9	-	1	-	3	1	-	4	-	1	1	1	-	-	-	1	1	1	1	1	1	1	-								
4th "	-	457.6	86.6	9.7	-	-	-	4	-	2	4	2	-	-	1	4	-	-	2	2	-	1	1	1	2	2	2	2	2	2	2	2	-								
For the Year	-	1,516.4	76.2	31.4	1.1	0.3	-	15	1	5	15	2	2	2	4	5	-	7	2	9	5	1	2	8	2	-	-	-	-	-	-	-	-								
For the Year					-	-	-	-	-	-	-	5.6	0.3	1.8	5.6	0.7	0.7	0.7	1.4	1.8	-	2.6	0.7	3.3	1.8	0.3	0.7	2.9	0.7	0.7	0.7										
					(a) Including Furunculus.														(b) Exclusive of Insolatio.																						

VIII.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the Pegu Division during the Year 1866 and the prevalence of the principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.				DEATHS.		ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																	DEATHS IN AND OUT OF HOSPITAL.																
	Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	Small Pox.	Ophthalmia.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Typhoid.	Febris Cont.	Rheumatism.	Venereal Diseases.	Phthisis Pulm.	Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Abscess and Ulcers. (a)	Atrophy and Anemia.	Wounds and Accidents.	All other Causes.												
				In Hospital.	Out of Hospital.																																			
1st Quarter	1,920	550	102.9	8	3	19	-	10	36	8	47	5	4	3	-	29	11	123	2	2	1	3	2	10	8	61	5	44	109											
2nd "	1,751	636	106.3	2	3	48	-	12	31	28	43	-	6	13	-	40	16	95	3	1	2	28	13	12	63	14	40	176												
3rd "	1,690	840	139.0	8	-	30	-	8	40	10	28	-	22	21	-	235	15	79	4	3	-	42	14	20	73	19	43	164												
4th "	1,602	539	101.4	5	3	33	-	6	30	12	21	-	16	13	1	46	7	81	6	1	6	29	14	3	12	6	48	171												
For the Year	1,741	2,555	112.4	23	9	130	-	36	137	58	139	5	48	50	1	350	49	378	15	7	9	131	51	43	209	44	175	620												
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																								
For the Year															20.6	78.6	33.3	79.8	2.8	27.5	28.7	0.5	201.0	28.1	217.1	8.6	4.0	5.1	75.2	20.2	24.6	120.0	25.2	100.5	356.1					
QUARTERS.	PER MILE OF STRENGTH.				DEATHS.		DEATHS PER THOUSAND OF AVERAGE STRENGTH.																																	
	Admissions.	Daily Sick.	DEATHS.		Invalided.	Small Pox.	Dysentery Act.	Dysentery Chron.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Typhoid.	Febris Cont.	Phthisis Pulmonalis.	Tremens.	Heart Diseases.	Respiratory Diseases.	Hepatitis Act.	Hepatitis Chron.	Atrophy and Anemia.	Wounds and Accidents. (b)	Insolatio.	All other Causes.																
			In Hospital.	Out of Hospital.																																				
1st Quarter	286.4	53.5	4.1	1.5	9.8	-	-	1	-	2	-	-	-	-	1	1	-	-	-	-	1	2	-	-	3															
2nd "	363.2	60.7	1.1	1.7	27.4	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	2	-	-															
3rd "	497.0	82.2	4.7	-	17.7	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1															
4th "	330.2	63.2	3.1	1.8	20.5	-	-	1	-	-	-	-	-	1	1	-	-	-	2	-	-	1	-	-	-															
For the Year	1467.5	64.5	13.2	5.1	74.6	-	-	4	-	2	2	-	-	-	4	1	-	-	2	-	2	4	2	4																
For the Year						2.2	2.2	-	1.1	1.1	-	0.5	2.2	0.5	-	0.5	-	-	-	1.1	-	1.1	2.2	1.1	2.2															

(a) Including Furunculus. (b) Exclusive of Insolatio.

STATIONAL RETURNS.

I.—TABLE showing SICKNESS and MORTALITY among the EUROPEAN TROOPS at each Station of the MADRAS PRESIDENCY in which they have been Cantoned during the Year 1866, arranged according to their mean average Annual Strength.

STATIONS.	Mean Strength.	Admissions.	Daily Sick.	Deaths in Hospital.	Deaths out of Hospital.	Invalided.
Secunderabad - -	2,577	3,938	200·83	84	3	—
Bangalore - - -	1,874	1,506	67·34	23	1	—
Kamptee - - -	1,042	1,742	62·76	13	4	4
Bellary - - -	851	1,525	72·23	7	-	66
Cannanore - - -	694	998	50·34	10	-	16
Rangoon - - -	693	1,341	60·55	12	6	61
Thyetmyoo - - -	565	570	27·37	9	3	15
Fort St. George - -	498	975	48·43	8	—	—
Saint Thomas' Mount -	453	697	33·08	12	-	5
Tonghoo - - -	450	630	24·87	2	-	46
Wellington - - -	285	547	35·82	8	-	—
Poonamallee - - -	222	562	27·67	18	4	385
Trichinopoly - - -	220	323	10·89	5	-	6
Palaveram - - -	200	153	5·84	7	1	—
Singapore - - -	136	179	6·35	1	—	—
Port Blair - - -	109	173	5·47	1	—	—
Vizagapatam - - -	96	59	1·73	3	—	—
Mulliappooram - - -	86	35	1·57	—	—	—
Calicut - - -	85	46	2·82	1	—	—
Penang - - -	74	160	5·37	2	—	—
Seetabuldee - - -	65	137	5·08	2	—	—
Chindwarrah* - - -	61	163	8·84	3	—	—
Ramandroog - - -	42	80	3·21	1	—	—

* For 40 weeks only.

II.—TABLE showing the Number of ADMISSIONS and DEATHS under different Classes of DISEASE at each STATION during 1866.

STATIONS.	Zymotic.		Constitutional.		Local.		Developmental.		Violence.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	2,563	45	53	5	1,004	23	34	1	318	10
Bangalore - - -	782	11	10	1	432	11	29	-	203	-
Kamptee - - -	1,167	4	29	1	428	6	1	-	117	2
Bellary - - -	954	3	38	1	438	3	7	-	88	-
Cannanore - - -	532	3	18	2	371	5	4	-	73	-
Rangoon - - -	837	12	12	-	408	-	12	-	72	-
Thyetmyoo - - -	247	4	5	-	229	2	16	2	73	1
Fort Saint George - -	665	5	8	-	246	3	8	-	48	-
Saint Thomas' Mount	382	6	10	1	219	3	9	1	77	1
Tonghoo - - -	300	-	6	-	260	2	32	-	32	-
Wellington - - -	240	2	19	2	248	4	19	-	21	-
Poonamallee - - -	251	10	45	7	237	1	17	-	12	-
Trichinopoly - - -	172	4	10	-	106	1	8	-	27	-
Palaveram - - -	66	1	2	3	62	3	6	-	17	-
Singapore - - -	76	-	1	1	66	-	-	-	36	-
Port Blair - - -	81	-	3	-	59	1	1	-	29	-
Vizagapatam - - -	27	2	-	-	28	1	1	-	3	-
Mulliappooram - - -	18	-	-	-	9	-	-	-	8	-
Calicut - - -	25	-	-	-	13	1	-	-	8	-
Penang - - -	84	-	-	1	52	1	1	-	23	-
Seetabuldee - - -	107	1	5	1	17	-	-	-	8	-
Chindwarrah* - - -	119	-	4	1	37	2	-	-	3	-
Ramandroog - - -	46	-	1	-	32	1	-	-	1	-

* For 40 weeks only.

IV.—TABLE showing the Principal DISEASES which have contributed to make up the ADMISSIONS into HOSPITAL, at each STATION, during the Year 1866.

STATIONS.	ADMISSIONS FROM												
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Ophthalmia.	Rheumatism.	Ebrietas.	Delirium Tremens.
Secunderabad - - -	278	58	277	6	3	1	470	342	15	75	138	38	5
Bangalore - - -	66	52	5	-	1	5	62	137	6	73	49	70	4
Kamptee - - -	582	4	11	-	-	-	26	51	1	32	73	27	1
Bellary - - -	60	-	100	-	1	-	87	163	2	111	46	4	1
Cannanore - - -	36	1	122	-	-	-	87	78	-	14	24	5	1
Rangoon - - -	10	1	323	-	1	-	116	57	-	18	25	4	2
Thyettmyoo - - -	26	5	16	-	-	-	17	39	4	10	13	8	2
Fort Saint George - - -	2	-	169	-	-	-	25	87	2	10	27	15	-
Saint Thomas' Mount - - -	68	3	12	-	1	-	46	37	4	15	43	13	1
Tonghoo - - -	13	44	8	-	-	-	57	42	-	8	10	2	1
Wellington - - -	61	1	1	-	-	-	24	12	-	14	24	2	1
Poonamallee - - -	7	-	21	-	-	1	72	16	1	14	27	6	2
Trichinopoly - - -	45	-	2	-	-	-	6	33	6	20	5	1	2
Palaveram - - -	14	-	8	-	-	-	2	15	2	3	4	8	-
Singapore - - -	10	-	4	-	-	-	1	9	-	2	4	4	2
Port Blair - - -	31	-	-	-	-	-	10	13	-	5	13	-	-
Vizagapatam - - -	9	-	-	-	-	-	5	1	-	-	4	3	1
Mulliapooram - - -	-	-	1	1	-	-	4	5	-	1	1	1	-
Calicut - - -	1	-	-	-	-	-	6	3	-	1	-	-	2
Penang - - -	29	-	1	-	1	-	1	4	-	9	10	4	-
Seetabuldee - - -	39	-	10	-	-	-	6	9	-	3	10	-	-
Chindwarrah* - - -	39	-	-	-	-	-	1	3	-	2	14	1	-
Ramandroog - - -	11	-	-	-	-	-	9	5	-	6	4	-	-

* For 40 weeks only.

V.—TABLE showing the Principal DISEASES which have contributed to make up the DEATHS in HOSPITAL at each Station during the Year 1866.

STATIONS.	DEATHS FROM												
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Ophthalmia.	Rheumatism.	Ebrietas.	Delirium Tremens.
Secunderabad - - -	2	2	4	-	2	-	16	5	12	-	1	-	-
Bangalore - - -	-	-	-	-	-	-	4	-	3	-	-	-	1
Kamptee - - -	3	-	-	-	-	-	-	1	1	-	-	-	1
Bellary - - -	-	-	-	-	-	-	3	-	-	-	-	-	1
Cannanore - - -	-	-	-	-	-	-	1	-	-	-	-	-	2
Rangoon - - -	2	-	4	-	1	-	4	-	-	-	-	-	-
Thyettmyoo - - -	-	-	-	-	-	-	1	-	2	-	-	1	-
Fort Saint George - - -	-	-	2	-	-	-	1	1	1	-	-	-	-
Saint Thomas' Mount - - -	-	1	-	-	1	-	1	-	3	-	-	-	1
Tonghoo - - -	-	-	-	-	-	-	-	-	-	-	-	-	1
Wellington - - -	-	-	-	-	-	-	2	-	-	-	-	1	1
Poonamallee - - -	-	-	-	-	-	-	5	-	1	-	1	-	5
Trichinopoly - - -	-	-	-	-	-	-	-	-	3	-	-	-	-
Palaveram - - -	-	-	-	-	-	-	-	-	1	-	-	-	2
Singapore - - -	-	-	-	-	-	-	-	-	1	-	-	-	1
Port Blair - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
Vizagapatam - - -	1	-	-	-	-	-	-	-	-	-	-	-	1
Mulliapooram - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
Calicut - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
Penang - - -	-	-	-	-	-	-	-	-	-	-	-	-	1
Seetabuldee - - -	-	-	-	-	-	-	1	-	-	-	-	-	1
Chindwarrah* - - -	-	-	-	-	-	-	-	-	-	-	-	1	-
Ramandroog - - -	-	-	-	-	-	-	-	-	-	-	-	-	-

* For 40 weeks only.

VI.—TABLE showing the Comparative Ratio of ADMISSIONS, DAILY AVERAGE SICK and MORTALITY, per 1,000, at each STATION occupied by EUROPEAN TROOPS in the MADRAS PRESIDENCY during 1866, arranged in the order of their Sickness and Mortality.

STATIONS whose Average Annual Strength exceeds 450.

Ratio of Admission per 1,000.		Ratio of Daily Average Sick per 1,000.		Ratio of Deaths per 1,000.		
					Deaths in Hospital.	Deaths out of Hospital.
Bangalore - -	803.6	Bangalore - -	35.9	Tonghoo - -	4.4	—
Thyettmyoo - -	1,008.8	Thyettmyoo - -	48.4	Bellary - -	8.8	—
Tonghoo - -	1,400.0	Tonghoo - -	55.2	Bangalore - -	12.2	0.5
Cannanore - -	1,438.0	Kamptee - -	60.2	Kamptee - -	12.4	3.8
Saint Thomas' Mount	1,538.6	Cannanore - -	72.5	Cannanore - -	14.4	—
Secunderabad - -	1,541.3	Saint Thomas' Mount	72.8	Thyettmyoo - -	15.9	5.3
Kamptee - -	1,671.8	Secunderabad - -	77.9	Fort Saint George - -	16.0	—
Bellary - -	1,792.0	Bellary - -	84.8	Rangoon - -	17.3	8.6
Rangoon - -	1,935.1	Rangoon - -	87.3	Saint Thomas' Mount	26.4	—
Fort Saint George - -	1,957.8	Fort Saint George - -	97.2	Secunderabad - -	32.5	1.1

STATIONS whose Average Strength is under 450.

Mulliapooram - -	406.9	Vizagapatam - -	18.0	Mulliapooram - -	—	—
Calicut - -	541.2	Mulliapooram - -	18.2	Singapore - -	7.3	—
Vizagapatam - -	614.6	Palaveram - -	29.2	Port Blair - -	9.1	—
Palaveram - -	765.0	Calicut - -	33.1	Calicut - -	11.7	—
Singapore - -	1,316.1	Singapore - -	46.6	Trichinopoly - -	22.7	—
Trichinopoly - -	1,468.1	Trichinopoly - -	49.5	Penang - -	27.0	—
Port Blair - -	1,587.1	Port Blair - -	50.1	Seetabuldee - -	30.7	—
Seetabuldee - -	2,107.7	Penang - -	72.5	Vizagapatam - -	31.2	—
Penang - -	2,162.2	Seetabuldee - -	78.1	Palaveram - -	35.0	5.0

DEPÔTS.

Rumandroog - -	1,904.7	Rumandroog - -	76.4	Rumandroog - -	23.8	—
Wellington - -	1,919.3	Poonamallee - -	124.6	Wellington - -	28.0	—
Poonamallee - -	2,531.5	Wellington - -	125.6	Chindwarrah - -	49.1	—
Chindwarrah - -	2,672.1	Chindwarrah - -	144.9	Poonamallee - -	81.0	18.0

VII.—TABLE showing the RATIO of ADMISSIONS and DEATHS per 1,000, under different Classes of DISEASES, at each STATION, during 1866.

STATIONS.	Zymotic.		Constitutional.		Local.		Developmental.		Violence.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - -	994.5	17.4	20.5	1.9	389.6	8.9	13.1	0.3	123.3	3.8
Bangalore - -	417.2	5.8	5.3	0.5	257.2	5.8	15.4	—	108.3	—
Kamptee - -	1,119.9	3.8	27.8	0.9	410.7	5.7	0.9	—	112.2	1.8
Bellary - -	1,121.0	3.5	44.6	1.1	514.6	3.5	8.2	—	103.4	—
Cannanore - -	766.5	4.3	25.9	2.8	534.5	7.2	5.7	—	105.1	—
Rangoon - -	1,207.7	17.3	17.3	—	588.7	—	17.3	—	103.8	—
Thyettmyoo - -	437.1	7.0	8.8	—	405.3	3.5	28.3	3.5	129.2	1.7
Fort Saint George	1,335.3	10.0	16.0	—	493.9	6.0	16.0	—	96.3	—
Saint Thomas' Mount	843.2	13.2	22.0	2.2	483.4	6.6	19.8	2.2	169.9	2.2
Tonghoo - -	666.6	—	13.3	—	577.7	4.4	71.1	—	71.1	—
Wellington - -	842.1	7.0	66.6	7.0	870.1	14.0	66.6	—	73.6	—
Poonamallee - -	1,130.6	45.0	202.7	31.5	1,067.5	4.5	76.5	—	54.0	—
Trichinopoly - -	781.8	18.1	45.4	—	481.8	4.5	36.3	—	122.7	—
Palaveram - -	330.0	5.0	10.0	15.0	310.0	15.0	30.0	—	85.0	—
Singapore - -	558.8	—	7.3	7.3	485.2	—	—	—	264.7	—
Port Blair - -	743.1	—	27.5	—	41.2	9.1	9.1	—	266.0	—
Vizagapatam - -	281.2	20.8	—	—	91.6	10.4	10.4	—	31.2	—
Mulliapooram - -	209.3	—	—	—	104.6	—	—	—	93.0	—
Calicut - -	294.1	—	—	—	152.9	11.7	—	—	94.1	—
Penang - -	1,135.1	—	—	13.5	702.7	13.5	13.5	—	310.8	—
Seetabuldee - -	1,646.1	15.3	76.9	15.3	261.5	—	—	—	123.0	—
Chindwarrah - -	1,950.8	—	65.5	16.3	606.5	32.7	—	—	49.1	—
Rumandroog - -	1,095.2	—	23.8	—	761.9	23.8	—	—	23.8	—

X.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 1st Quarter (January, February, March) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 of Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic Diseases.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	55	2	79	-	26	-	2	1	47	4	220	4	735	11	92.0	1.6	307.6	4.6
Bangalore - - -	35	-	10	-	17	-	1	-	15	1	106	-	381	2	54.4	-	195.8	1.0
Kamptee - - -	94	1	2	-	12	-	-	-	9	-	146	1	358	2	138.5	0.9	339.6	1.8
Bellary - - -	24	-	9	-	42	-	-	-	9	-	133	-	355	-	153.4	-	409.4	-
Cannanore - - -	28	-	27	-	23	-	-	-	22	1	100	-	253	1	210.5	-	532.6	2.1
Rangoon - - -	20	1	30	1	32	-	-	-	10	-	94	2	290	2	126.3	2.6	389.7	2.6
Thyettmyoo - - -	3	-	6	-	8	-	4	2	3	-	29	2	145	5	49.0	3.3	245.3	8.4
Fort Saint George - - -	40	-	21	1	19	-	-	-	28	-	113	1	317	3	193.8	1.7	543.7	5.1
Saint Thomas' Mount - - -	28	-	15	-	11	-	-	-	16	-	79	-	226	1	151.6	-	433.7	1.9
Tonghoo - - -	10	-	9	-	6	-	-	-	4	-	41	-	110	1	86.8	-	233.0	2.1
Wellington - - -	5	-	2	-	4	-	-	-	6	-	25	-	92	1	170.0	-	625.8	6.8
Poonamallee - - -	12	-	27	2	2	-	-	-	42	-	62	3	231	6	185.0	8.9	689.5	17.9
Trichinopoly - - -	10	-	3	-	3	-	3	1	-	-	26	1	63	2	119.2	4.5	288.9	9.1
Palaveram - - -	2	-	-	-	6	-	-	-	3	-	14	-	44	1	81.3	-	255.8	5.8
Singapore - - -	4	-	1	-	2	-	-	-	2	-	16	-	55	-	115.1	-	395.6	-
Port Blair - - -	3	-	-	-	-	-	-	-	3	-	6	-	23	-	54.5	-	209.0	-
Vizagapatam - - -	3	-	1	-	-	-	-	-	-	-	7	-	22	-	64.2	-	201.8	-
Mullaiipooram - - -	-	-	-	-	2	-	-	-	-	-	3	-	8	-	35.7	-	95.2	-
Calicut - - -	-	-	3	-	-	-	-	-	-	-	3	-	3	-	34.4	-	34.4	-
Penang - - -	9	-	1	-	2	-	-	-	1	-	17	-	37	1	226.6	-	493.3	13.3
Seetabuldee - - -	15	-	-	-	1	-	-	-	-	-	18	-	35	-	257.1	-	500.0	-
Chindwarrah - - -	10	-	-	-	-	-	-	-	1	-	13	-	41	1	295.4	-	931.8	22.7
Ramandroog - - -	-	-	-	-	-	-	-	-	2	-	3	-	15	-	78.9	-	394.7	-

XI.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 2nd Quarter (April, May, June) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 of Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic Diseases.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	176	-	50	3	36	-	1	1	33	4	319	6	876	17	118.5	2.2	325.5	6.3
Bangalore - - -	43	-	23	1	34	-	-	-	6	-	145	3	404	8	77.8	1.6	216.8	4.2
Kamptee - - -	91	-	4	-	4	-	-	-	16	-	151	-	367	2	142.3	-	345.8	1.8
Bellary - - -	48	-	9	-	45	-	-	-	4	-	184	-	391	1	213.9	-	454.5	1.1
Cannanore - - -	97	-	12	-	25	-	-	-	15	-	138	-	265	2	196.8	-	377.9	2.8
Rangoon - - -	37	1	32	-	10	-	-	-	19	-	96	1	298	1	134.0	1.3	416.1	1.3
Thyettmyoo - - -	6	-	5	-	13	-	-	-	5	-	40	-	162	1	69.9	-	283.1	1.7
Fort Saint George - - -	61	2	1	-	12	-	-	-	19	-	93	2	258	3	182.7	3.9	506.8	5.9
Saint Thomas' Mount - - -	32	-	8	-	14	-	1	-	10	-	76	1	188	2	159.3	2.0	394.0	4.1
Tonghoo - - -	17	-	21	-	21	-	-	-	1	-	77	-	174	-	164.8	-	372.5	-
Wellington - - -	27	-	7	1	5	-	-	-	12	1	52	1	171	4	139.7	2.6	459.6	10.7
Poonamallee - - -	9	-	10	-	1	-	1	1	25	-	30	1	194	4	129.8	4.3	580.0	17.3
Trichinopoly - - -	9	-	2	-	6	-	2	1	4	-	24	1	96	1	106.6	4.4	426.6	4.4
Palaveram - - -	3	-	2	-	4	-	-	-	3	-	10	-	36	4	58.1	-	209.2	23.2
Singapore - - -	6	-	-	-	6	-	-	-	4	-	16	-	51	-	116.7	-	372.2	-
Port Blair - - -	5	-	6	-	5	-	-	-	11	-	21	-	60	-	190.9	-	545.4	-
Vizagapatam - - -	6	1	3	-	1	-	-	-	-	-	11	1	26	1	113.4	10.3	267.9	10.3
Mullaiipooram - - -	1	-	1	-	-	-	-	-	-	-	3	-	11	-	34.4	-	126.4	-
Calicut - - -	-	-	2	-	-	-	-	-	-	-	3	-	6	-	35.2	-	70.5	-
Penang - - -	5	-	-	-	1	-	-	-	-	-	15	-	44	1	200.0	-	586.6	13.3
Seetabuldee - - -	3	-	-	-	-	-	-	-	1	-	7	-	18	-	118.6	-	305.0	-
Chindwarrah - - -	9	-	1	-	1	-	-	-	-	-	27	-	48	-	402.9	-	716.3	-
Ramandroog - - -	6	-	4	-	-	-	-	-	3	-	16	-	25	1	313.7	-	490.1	19.6

XII.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 3rd Quarter (July, August, September) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 of Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic Diseases.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	183	4	174	9	167	3	8	6	36	2	647	22	1,189	31	243·8	8·2	448·1	11·6
Bangalore - - -	27	-	23	3	52	-	3	2	11	-	162	6	401	9	87·0	3·2	215·4	4·8
Kamptee - - -	211	-	13	-	29	-	1	1	31	-	295	1	533	1	287·3	0·9	518·9	0·9
Bellary - - -	24	-	49	2	45	-	-	-	2	1	207	2	445	4	242·1	2·3	520·4	4·6
Cannanore - - -	23	-	28	-	11	-	-	-	13	2	73	1	210	4	104·7	1·4	301·2	5·7
Rangoon - - -	232	2	26	2	4	-	-	-	12	-	289	5	495	5	420·6	7·2	720·5	7·2
Thyettmyoo - - -	19	-	6	1	12	-	-	-	3	-	42	2	141	3	74·6	3·5	250·4	5·3
Fort Saint George - -	54	-	-	-	35	-	2	1	9	-	104	1	324	1	220·3	2·1	474·5	2·1
Saint Thomas' Mount -	16	1	13	1	9	-	1	1	12	1	57	3	158	5	139·3	7·3	386·3	12·2
Tonghoo - - -	26	-	13	-	11	-	-	-	16	-	80	-	198	-	182·2	-	451·0	-
Wellington - - -	14	-	5	-	2	-	-	-	17	-	42	-	161	-	129·2	-	495·3	-
Poonamallee - - -	6	-	18	1	5	-	-	-	14	-	40	3	104	5	246·9	18·5	641·9	30·8
Trichinopoly - - -	10	-	-	-	9	-	-	-	5	-	27	-	79	-	137·7	-	403·0	-
Palaveram - - -	8	-	-	-	3	-	-	-	5	-	14	-	31	1	71·7	-	158·9	5·1
Singapore - - -	4	-	-	-	1	-	-	-	3	-	19	-	53	1	142·8	-	398·4	7·5
Port Blair - - -	16	-	3	-	4	-	-	-	30	-	48	-	48	-	277·7	-	444·4	-
Vizagapatam - - -	-	-	1	-	-	-	-	-	2	1	5	1	5	1	21·2	10·6	53·1	10·6
Mullapooram - - -	-	-	3	-	1	-	-	-	-	-	5	-	7	-	57·4	-	80·4	-
Calicut - - -	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	152·9	-
Penang - - -	6	-	-	-	1	-	-	-	1	-	19	-	48	-	253·3	-	64·0	-
Seetabuldee - - -	15	-	4	-	7	-	-	-	3	-	27	1	38	2	428·5	15·8	603·1	31·7
Chindwarrah - - -	13	1	-	-	2	-	-	-	4	1	17	-	62	2	257·5	-	939·3	30·3
Ramandroog - - -	-	-	4	-	4	-	-	-	2	-	11	-	23	-	239·1	-	500·0	-

XIII.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 4th Quarter (October, November, December 1866), at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 of Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic Diseases.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	208	3	167	4	113	2	4	4	68	4	631	13	1,172	25	245·1	5·0	455·3	9·7
Bangalore - - -	19	-	6	-	34	-	2	1	13	1	88	1	320	4	48·2	0·5	175·3	2·1
Kamptee - - -	201	2	7	-	6	1	-	-	11	1	247	2	484	8	241·2	1·9	472·6	7·8
Bellary - - -	65	-	20	1	31	-	2	-	2	1	188	1	334	2	228·7	1·2	406·3	2·4
Cannanore - - -	11	-	20	1	14	-	-	-	25	-	60	1	270	3	94·7	1·5	426·5	4·7
Rangoon - - -	46	1	28	2	11	-	-	-	6	-	106	4	258	4	170·1	6·4	414·1	6·4
Thyettmyoo - - -	19	-	-	-	6	-	-	-	1	-	31	-	122	-	57·6	-	226·7	-
Fort Saint George - -	16	-	3	-	21	1	-	-	10	-	59	1	176	1	137·8	2·3	411·2	2·3
Saint Thomas' Mount -	8	1	10	-	3	-	2	1	6	-	40	2	125	4	98·5	4·9	307·8	9·8
Tonghoo - - -	10	-	14	-	4	-	-	-	10	1	47	-	148	1	111·9	-	352·3	2·3
Wellington - - -	17	-	10	1	1	-	-	-	11	-	40	1	123	3	134·6	3·3	414·1	10·1
Poonamallee - - -	1	-	17	2	8	-	-	-	5	-	38	3	93	3	240·5	18·9	588·6	18·9
Trichinopoly - - -	18	-	1	-	15	-	1	1	9	-	55	2	85	2	263·9	10·1	431·4	10·1
Palaveram - - -	9	-	-	-	2	-	2	1	1	-	13	1	42	1	50·0	3·8	161·5	3·8
Singapore - - -	-	-	-	-	-	-	-	-	-	-	2	-	20	-	14·9	-	149·2	-
Port Blair - - -	7	-	1	-	4	-	-	-	4	1	18	-	42	1	165·1	-	385·3	9·1
Vizagapatam - - -	-	-	-	-	-	-	-	-	-	-	2	-	6	1	24·0	-	72·2	12·0
Mullapooram - - -	1	-	-	-	2	-	-	-	1	-	3	-	9	-	35·2	-	105·8	-
Calicut - - -	1	-	1	-	2	-	-	-	2	1	5	-	24	1	60·9	-	292·6	12·1
Penang - - -	10	-	-	-	-	-	-	-	2	-	11	-	31	-	152·7	-	430·5	-
Seetabuldee - - -	16	-	2	-	1	-	-	-	1	-	26	-	46	-	388·0	-	686·5	-
Chindwarrah - - -	7	-	-	-	-	-	-	-	-	-	7	-	12	-	107·6	-	184·6	-
Ramandroog - - -	5	-	1	-	1	-	-	-	-	-	8	-	17	-	242·4	-	515·1	-

NATIVE ARMY RETURNS.

I.—TABLE showing INCREASE and DECREASE among the NATIVE ARMY, serving in the MADRAS PRESIDENCY during the Year 1866.

Strength on 1st January 1866	-	-	-	-	-	-	-	-	-	32,121
Strength on 1st January 1867	-	-	-	-	-	-	-	-	-	31,979
INCREASE.										
By recruits	-	-	-	-	-	-	-	-	-	1,242
By transfers	-	-	-	-	-	-	-	-	-	255
Joined from desertion	-	-	-	-	-	-	-	-	-	23
By other causes	-	-	-	-	-	-	-	-	-	462
TOTAL	-	-	-	-	-	-	-	-	-	1,982
DECREASE.										
By invaliding	-	-	-	-	-	-	-	-	-	-
By reduction of establishment	-	-	-	-	-	-	-	-	-	-
By summary dismissal	-	-	-	-	-	-	-	-	-	297
By desertion	-	-	-	-	-	-	-	-	-	61
By deaths	-	-	-	-	-	-	-	-	-	526
By pensioning and other causes	-	-	-	-	-	-	-	-	-	1,240
TOTAL	-	-	-	-	-	-	-	-	-	2,124
Decrease on 1st January 1867	-	-	-	-	-	-	-	-	-	142

DIVISIONAL RETURNS.

I.—TABLE showing the Sickness and Mortality among the Native Troops serving in the Centre Division, during the Year 1866, and the Prevalence of the Principal Diseases in each Quarter of the Year

QUARTERS.	DEATHS.		Average daily Sick.	Total Admissions.	Average Strength.	ADMISSIONS INTO HOSPITAL.																		
	In Hospital.	Out of Hospital.				Small-pox.	Chicken-pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Veneral Diseases.	Parasitic Diseases. (a)	Guinea Worm.	Dropsy. (b)	Phtisis Pulm.	Respiratory Diseases.	Splenitis.	Hepatitis.	Abscess and Ulcers. (c)
1st Quarter	10	1	51	4	8	25	27	1	107	-	6	39	17	19	10	4	-	12	2	3	47	15	34	50
2nd "	13	1	7	4	3	21	29	4	87	5	1	43	15	19	33	1	2	9	-	3	57	-	28	96
3rd "	28	7	-	4	18	25	52	38	178	-	24	50	20	10	15	1	-	16	-	-	75	27	27	60
4th "	11	-	26	-	29	30	31	16	158	1	16	29	24	18	3	2	2	19	1	1	33	22	33	81
For the Year	62	9	84	1	58	101	139	59	530	6	47	161	76	66	61	8	4	56	3	7	212	64	122	287

ADMITTED PER THOUSAND OF AVERAGE STRENGTH.

For the Year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.2	2.3	17.0	29.6	40.8	17.3	156.6	1.7	13.7	47.2	22.3	19.3	17.9	2.3	1.1	16.4	0.8	2.0	62.2	18.7	35.8	8.2	

PER MILE OF STRENGTH.

QUARTERS.	Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Pthiasis.	Heart Diseases.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents. (d)	Insolatio.	All other Causes.
			In Hospital.	Out of Hospital.																			
1st Quarter	139·2	25·4	3·2	0·3	16·5	—	2	3	—	3	1	—	—	—	—	—	—	—	—	—	—	—	3
2nd "	132·4	32·2	3·7	0·2	2·0	—	—	1	4	1	1	—	—	—	—	—	—	—	—	1	—	—	3
3rd "	181·5	33·8	7·9	1·9	—	—	—	—	21	—	—	1	—	1	—	1	2	—	—	—	—	—	9
4th "	154·2	26·4	3·0	—	7·3	—	—	—	6	—	1	—	—	1	—	1	1	—	—	—	—	—	1
For the Year	609·5	29·3	18·2	2·6	24·6	—	2	4	31	4	2	1	—	2	2	2	4	—	—	1	—	—	16

DEATHS PER THOUSAND OF AVERAGE STRENGTH.

For the Year	-	0.5	1.1	9.1	1.1	0.5	0.2	-	0.5	0.5	0.5	1.1	-	0.2	-	-	4.6

(a) Exclusive of Guinea Worm.

(b) Including Anasarca and Ascites.

(c) Including Furunculus.

(d) Exclusive of Insolio.

II.—TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the SOUTHERN DIVISION, during the Year 1866, and the Prevalence of the Principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.										DEATHS.										PER MILLE OF STRENGTH.										QUARTERS.	DEATHS IN AND OUT OF HOSPITAL.										All other Causes.
	Average Strength.	Total Admissions.	Average daily Sick.	DEATHS.		Invalided.	Small-pox.	Chicken-pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Phtisis Pulmonalis.	Heart Diseases.	Respiratory Diseases.	Splentitis.	Hepatitis.	Abscess and Ulcers. (c)	Atrophia and Anæmia.	Wounds and Accidents.	All other Causes.																
				In Hospital.	Out of Hospital.																						Admissions.	Daily Sick.	In Hospital.	Out of Hospital.		Invalided.	Small-pox.	Chicken-pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	
1st Quarter	-	2,695	224	28.8	6	-	1	3	-	6	9	3	2	61	1	4	22	9	17	1	-	-	4	-	33	3	17	29														
2nd "	-	2,570	218	49.0	3	2	-	2	1	11	2	7	-	22	-	2	38	24	14	1	2	3	-	34	7	19	29															
3rd "	-	2,682	240	44.0	5	-	4	-	-	21	10	14	-	21	-	-	22	28	15	-	1	3	-	53	2	18	32															
4th "	-	2,761	310	49.2	10	1	-	-	-	29	17	11	10	49	-	1	36	20	18	-	4	10	-	47	7	14	35															
For the Year	-	2,677	992	42.7	24	3	5	5	1	67	38	35	12	153	1	7	118	81	64	2	5	4	20	-	167	19	68	125														

ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																	
For the Year										1.8	0.3	25.0	14.1	13.0	4.4	57.1	0.3	2.6	44.0	30.2	23.9	0.7	1.8	1.4	7.4	-	62.3	7.0	25.4	46.6			
DEATHS IN AND OUT OF HOSPITAL.																																	
QUARTERS.	PER MILLE OF STRENGTH.										DEATHS.										PER THOUSAND OF AVERAGE STRENGTH.										(b) Including Anaærea and Ascites.	(c) Including Furunculus.	(d) Exclusive of Insolio.
Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Chicken-pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Phtisis Pulmonalis.	Heart Diseases.	Respiratory Diseases.	Splentitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents. (d)	Insolio.	All other Causes.										
In Hospital.	Out of Hospital.																																
1st Quarter	-	83.1	10.6	2.2	-	0.3	-	-	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2						
2nd "	-	84.8	19.0	1.1	0.7	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2						
3rd "	-	89.4	16.4	1.8	-	1.4	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-						
4th "	-	112.2	17.8	3.6	0.3	-	-	1	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2						
For the Year	-	370.5	15.9	8.9	1.1	1.8	-	1	4	8	1	1	1	-	-	2	1	-	-	-	-	-	-	-	2	-	6						

V.—TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the NORTHERN DIVISION, during the Year 1866, and the Prevalence of the Principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.										DEATHS IN AND OUT OF HOSPITAL.																													
	Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	Small-pox.	Chicken-pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Venereal Diseases.	Parasitic Diseases. (a.)	Guinea Worm.	Dropsy. (b.)	Phthisis Pulm.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents. (d)	Insolatio.	All other Causes.												
				In Hospital.	Out of Hospital.																																			
1st Quarter	3,871	531	75.8	30	1	—	3	10	9	8	18	35	175	—	—	—	53	24	20	—	6	—	18	—	1	61	9	32	49											
2nd "	3,684	565	80.7	9	2	3	—	2	19	12	3	5	211	—	1	—	66	18	19	—	2	1	15	—	1	90	15	26	59											
3rd "	3,798	864	123.4	10	2	—	1	2	54	53	23	15	380	2	2	—	95	19	22	—	7	1	26	—	2	57	18	28	57											
4th "	3,923	1,185	169.1	14	1	3	4	1	28	21	21	5	803	1	—	—	76	19	19	—	3	2	24	—	3	57	10	37	51											
For the Year	3,819	3,145	112.2	63	4	6	8	15	110	94	65	60	1,569	3	3	3	290	80	80	—	18	4	83	—	7	265	52	123	216											
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																																								
For the Year						—	2.0	3.9	28.8	24.6	17.0	15.7	410.8	0.7	0.7	75.9	20.9	20.9	—	4.7	1.0	21.7	—	1.8	69.3	13.6	42.2	56.5												
QUARTERS.	PER MILLE OF STRENGTH.				DEATHS.		DEATHS PER THOUSAND OF STRENGTH.														(a.) Exclusive of Guinea Worm.					(b.) Including Anasarca and Ascites.					(c.) Including Furunculus.					(d.) Exclusive of Insolation.				
	Admissions.	Daily Sick.	In Hospital.	Out of Hospital.	Invalided.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Phthisis Pulm.	Heart Diseases.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents. (d)	Insolatio.	All other Causes.																	
																								For the Year					0.2					0.7					1.3	
1st Quarter	137.1	19.5	7.7	—	—	1	1	—	18	1	—	—	2	2	—	—	1	—	—	2	—	1	—	—	2	—	1	—	2	—										
2nd "	153.3	21.9	2.4	0.5	0.8	—	—	—	—	3	—	—	1	1	—	—	—	—	2	—	1	—	—	1	—	1	—	—	—	3										
3rd "	227.4	32.4	2.6	0.5	—	—	—	—	9	1	1	9	1	—	—	—	—	3	4	—	1	—	4	—	3	—	1	—	—	1										
4th "	302.0	43.1	3.5	—	0.7	—	—	2	—	3	—	3	—	—	—	1	1	1	—	2	1	—	—	—	1	—	1	—	—	3										
For the Year	823.2	29.3	16.4	1.0	1.5	1	3	1	23	5	—	—	6	3	—	—	5	—	1	7	—	—	—	9																

VII.—TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the NAGPORE FORCE, during the Year 1866, and the Prevalence of the Principal Diseases in each Quarter of the Year.

ADMISSIONS INTO HOSPITAL.												DEATHS IN AND OUT OF HOSPITAL.																							
QUARTERS.		Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	PER MILLE OF STRENGTH.																All other Causes.											
					In Hospital.	Out of Hospital.		Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Phtisis Pulm.	Heart Diseases.		Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anæmia.	Wounds and Accidents. (d)	Insolatio.					
1st Quarter	-	3,067	932	115.2	10	1	-	3	11	12	10	14	-	-	565	6	65	39	20	12	-	1	22	1	43	10	48	50	All other Causes.						
2nd "	-	3,043	891	95.0	9	-	-	-	2	17	21	7	1	431	4	126	31	27	2	1	-	-	11	1	2	-	48	80							
3rd "	-	3,070	853	110.4	4	-	-	-	1	46	57	31	5	354	2	99	36	10	9	-	-	11	-	2	6	51	48								
4th "	-	3,144	1,050	127.2	6	-	-	-	-	39	11	15	-	-	616	3	142	27	13	8	1	-	13	1	-	8	50	46							
For the Year	-	3,081	3,726	111.9	29	1	-	3	14	114	99	67	6	1,966	15	482	133	70	31	2	12	1	57	3	4	252	24	197		224					
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS IN AND OUT OF HOSPITAL.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
QUARTERS.		Admissions.	Daily Sick.	DEATHS.		Invalided.	DEATHS PER THOUSAND OF AVERAGE STRENGTH.																(c) Exclusive of Insolatio.												
				In Hospital.	Out of Hospital.		(a) Including Anasarca and Ascites.	(b) Including Furunculus.	(c) Including Anasarca and Ascites.	(d) Exclusive of Insolatio.																									
1st Quarter	-	303.7	37.5	3.2	0.3	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	3	-	-	-	-	-	-	All other Causes.						
2nd "	-	292.8	31.2	2.9	-	-	-	-	-	-	-	-	-	-	2	1	-	1	-	1	-	1	-	-	-	-	-	-							
3rd "	-	277.8	35.9	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-							
4th "	-	302.1	40.4	1.9	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-							
For the Year	-	1209.3	36.3	9.4	0.3	-	-	-	-	-	-	-	3	7	1	-	-	1	1	-	1	4	-	-	1	-	-	-		9					
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2	43.1	22.7	10.0	0.6	3.8	0.3	18.5	0.9	1.2	81.7	7.7	63.9	72.7		
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.												DEATHS PER THOUSAND OF AVERAGE STRENGTH.																							
For the Year												0.9	4.5	37.0	32.1	21.7	1.9	638.1	4.8	140.2															

VIII.—TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the PEGU DIVISION during the Year 1866, and the Prevalence of the Principal Diseases in each Quarter of the Year.

QUARTERS.	ADMISSIONS INTO HOSPITAL.										DEATHS IN AND OUT OF HOSPITAL.										DEATHS PER THOUSAND OF AVERAGE STRENGTH.										
	Average Strength.	Total Admissions.	Average Daily Sick.	DEATHS.		Invalided.	Small-pox.	Chicken-pox.	Ophthalmia.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Venereal Diseases.	Parasitic Diseases. (a)	Guinea Worm.	Dropsy. (b)	Phthisis Pulm.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anemia.	Ulcers. (c)	Abscess and Ulcers.	Wounds and Accidents.	All other Causes.		
				In Hospital.	Out of Hospital.																										
1st Quarter -	3,098	498	131.0	6	-	9	-	1	-	27	28	-	184	1	-	51	33	24	1	3	2	11	-	-	1	33	11	26	67		
2nd " -	1,956	387	79.6	7	-	3	-	-	7	29	29	-	86	-	-	36	18	35	2	-	-	8	-	-	-	55	5	29	48		
3rd " -	2,683	569	96.0	4	-	7	1	-	6	71	72	-	139	4	9	32	16	29	1	2	1	20	-	-	-	38	22	39	69		
4th " -	2,519	627	113.3	8	-	-	2	1	6	31	47	-	173	2	-	31	28	25	1	1	1	33	-	4	70	41	36	96			
For the Year - -	2,589	2,076	104.9	25	-	19	3	2	19	158	176	-	582	7	9	150	95	113	3	6	2	72	-	4	196	79	130	270			
ADMITTED PER THOUSAND OF AVERAGE STRENGTH.																															
For the Year - - -										1.1	0.7	7.3	61.0	67.9	-	224.7	2.7	3.4	57.9	36.6	43.6	1.1	2.3	0.7	27.8	-	1.5	75.7	30.9	50.2	104.2
QUARTERS.	PER MILLE OF STRENGTH.										DEATHS IN AND OUT OF HOSPITAL.										DEATHS PER THOUSAND OF AVERAGE STRENGTH.										
	Admissions.	Daily Sick.	DEATHS.		Invalided.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Febris Intermittent.	Febris Remittent.	Febris Cont.	Rheumatism.	Dropsy.	Phthisis Pulmonalis.	Heart Diseases.	Respiratory Diseases.	Splenitis.	Hepatitis.	Atrophia and Anemia.	Wounds and Accidents. (d)	Insolatio.	All other Causes.								
			In Hospital.	Out of Hospital.																											
1st Quarter -	159.1	42.3	1.9	-	2.9	1	1	-	2	1	-	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	4		
2nd " -	197.8	40.6	3.5	-	1.5	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3		
3rd " -	212.0	35.7	1.4	-	2.6	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1		
4th " -	239.4	43.2	3.0	-	-	1	2	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-	-	-	-	-	1		
For the Year - - -	801.8	40.5	9.6	-	7.3	1	5	1	-	2	1	-	1	1	2	1	1	1	-	-	4	-	-	-	-	-	-	5			
For the Year - - -																															
For the Year - - -										0.3	1.9	0.3	-	0.7	0.3	-	0.3	0.7	0.3	0.3	0.3	0.3	0.3	-	-	1.5	-	-	1.9		
For the Year - - -										For the Year - - -										For the Year - - -											

STATIONAL RETURNS.

I.—TABLE showing SICKNESS and MORTALITY among the NATIVE TROOPS at each STATION of the MADRAS PRESIDENCY in which they have been Cantonied during the Year 1866, arranged according to their Mean Average Annual Strength.

STATIONS.	Mean Strength.	Admissions.	Daily Sick.	Deaths in Hospital.	Deaths out of Hospital.	Invalided.
Secunderabad - - - - -	2,619	2,576	114.79	25	3	2
Bangalore - - - - -	2,220	1,272	59.08	32	4	1
Fort St. George - - - - -	2,019	1,116	38.67	47	1	—
Bellary - - - - -	1,479	1,086	48.42	20	—	—
Kamptee - - - - -	1,441	1,429	42.65	13	1	—
Cannanore - - - - -	1,315	415	17.93	10	4	—
Trichinopoly - - - - -	1,277	377	18.93	16	2	7
Vellore - - - - -	1,052	512	21.78	7	6	—
Waltair - - - - -	841	480	23.76	11	—	—
Mangalore - - - - -	798	350	11.22	10	6	21
Cuddapah (a) - - - - -	785	334	20.22	9	—	—
Berhampore - - - - -	755	382	23.86	12	—	—
Rangoon - - - - -	741	623	37.02	7	—	29
Mercara - - - - -	739	438	13.90	9	3	14
Samulcottah - - - - -	725	427	11.15	10	—	—
Raipoor (f) - - - - -	712	788	23.92	2	—	—
Vizianagrum - - - - -	703	308	12.49	7	3	3
Mysore (c) - - - - -	699	1,041	33.18	5	—	—
Palamcottah - - - - -	669	289	6.48	5	—	—
Thyetmyoo - - - - -	667	327	15.24	3	3	—
Kurnool - - - - -	645	1,487	35.01	9	—	2
Moulmein - - - - -	604	317	18.57	6	—	—
Tonghoo (g) - - - - -	571	399	16.85	7	1	—
Singapore (g) - - - - -	561	762	17.53	3	—	—
Penang - - - - -	467	254	13.86	5	—	—
Cuttack - - - - -	453	450	11.21	4	—	14
Quilon - - - - -	432	176	9.67	3	1	27
Seetabuldee - - - - -	425	736	14.15	3	—	—
Hoosingabad - - - - -	385	435	20.88	3	—	—
Sumbulpore - - - - -	336	1,123	29.96	19	1	—
Hurryhur - - - - -	231	133	4.85	3	—	—
Port Blair - - - - -	191	286	8.90	1	—	—
Malacca - - - - -	183	117	5.21	1	—	—
St. Thomas' Mount - - - - -	180	198	4.39	1	—	—
Trichore - - - - -	177	92	2.98	—	—	—
Palaveram - - - - -	176	270	35.16	8	—	33
Wynaad (d) - - - - -	168	241	9.53	1	—	—
Chandah (a) - - - - -	166	272	8.84	1	—	—
Labuan (e) - - - - -	164	394	9.36	1	1	—
Seroncha - - - - -	163	193	8.14	—	1	—
Shoagheen - - - - -	127	242	6.98	1	—	12
Mootoor (b) - - - - -	81	111	6.95	3	—	—
Chind warrah (b) - - - - -	81	74	2.72	1	—	—
Trivandrum - - - - -	73	32	0.95	—	—	—

(a) Up to 28th December only.
 (b) For 23 weeks only.
 (c) For 47 weeks only.

(d) For 27 weeks only.
 (e) For 44 weeks only.

(f) For 51 weeks only.
 (g) For 43 weeks only.

II.—TABLE showing the Number of ADMISSIONS and DEATHS under different Classes of DISEASES at each STATION during 1866.

STATIONS.	Zymotic.		Constitutional.		Local.		Developmental.		Violence.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	2,216	16	9	1	216	7	8	-	127	1
Bangalore - - -	784	21	75	1	286	7	21	2	105	1
Fort St. George - - -	768	37	14	1	238	9	21	-	75	-
Bellary - - -	701	14	10	2	170	3	33	1	172	-
Kamptee - - -	1,190	9	21	-	145	4	7	-	66	-
Cannanore - - -	254	2	10	1	102	5	11	2	38	-
Trichinopoly - - -	224	10	6	2	107	3	11	1	29	-
Vellore - - -	371	4	5	1	97	1	13	1	26	-
Waltair - - -	324	9	31	1	91	1	8	-	26	-
Mangalore - - -	215	6	3	1	106	2	8	1	18	-
Cuddapah (a) - - -	163	6	3	1	51	2	1	-	16	-
Berhampore - - -	286	8	4	-	63	2	5	2	24	-
Rangoon - - -	419	4	5	-	104	2	32	1	63	-
Mercara - - -	354	8	3	-	65	1	6	-	10	-
Samulcottah - - -	258	3	14	3	129	4	3	-	23	-
Raipore (f) - - -	616	-	8	1	104	1	-	-	60	-
Vizianagrum - - -	201	4	17	1	75	2	3	-	12	-
Mysore (c) - - -	951	4	14	1	58	-	3	-	15	-
Palamcottah - - -	192	3	2	-	75	-	7	1	13	1
Thyettmyoo - - -	173	1	6	-	124	2	8	-	16	-
Kurnool - - -	1,353	6	10	2	75	1	4	-	45	-
Moulmein - - -	214	2	5	1	80	2	5	1	13	-
Tonghoo (g) - - -	237	4	1	1	109	1	24	1	28	-
Singapore (g) - - -	657	1	1	-	82	1	2	-	20	1
Penang - - -	166	4	3	-	61	-	6	1	18	-
Cuttack - - -	359	2	4	-	56	1	3	1	28	-
Quilon - - -	107	2	-	-	50	1	1	-	18	-
Seetabuldee - - -	609	2	1	-	94	-	5	1	27	-
Hoosingabad - - -	353	3	-	-	60	-	-	-	22	-
Sumbulpore - - -	1,069	14	7	-	33	5	-	-	14	-
Hurryhur - - -	88	2	4	1	26	-	1	-	14	-
Port Blair - - -	171	-	7	1	72	-	5	-	31	-
Malacca - - -	61	1	-	-	36	-	4	-	16	-
St. Thomas' Mount - -	135	-	1	1	49	-	1	-	12	-
Trichore - - -	42	-	2	-	41	-	-	-	7	-
Palaveram - - -	131	3	9	1	58	4	68	-	4	-
Wynaad (d) - - -	152	1	1	-	46	-	-	-	42	-
Chandah (a) - - -	212	1	9	-	42	-	-	-	9	-
Labuan (e) - - -	356	1	3	-	21	-	8	-	6	-
Seroncha - - -	147	-	3	-	32	-	-	-	11	-
Shoagheen - - -	211	1	-	-	23	-	-	-	8	-
Mootoor (b) - - -	82	-	-	-	20	3	-	-	9	-
Chindwarrah (b) - -	43	-	1	-	22	1	-	-	8	-
Trivandrum - - -	18	-	-	-	11	-	-	-	3	-

(a) Up to 28th December only.
 (b) For 23 weeks only.
 (c) For 47 weeks only.

(d) For 27 weeks only.
 (e) For 44 weeks only.

(f) For 51 weeks only.
 (g) For 43 weeks only.

IV.—TABLE showing the principal DISEASES which have contributed to make up the ADMISSIONS into Hospital during the Year 1866, at each STATION.

STATIONS.	Admissions from														
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small-pox.	Dysentery.	Diarrhea.	Cholera.	Ophthalmia.	Rheumatism.	Ebrietas.	Delirium Tremens.	Hepatic Diseases.	
Secunderabad - - - - -	1,682	6	7	-	1	3	57	101	10	104	55	1	1	6	
Bangalore - - - - -	306	17	30	-	-	25	35	44	24	78	91	-	-	4	
Fort St. George - - - - -	250	4	37	-	-	-	50	69	53	28	73	-	-	4	
Bellary - - - - -	251	3	33	-	-	1	78	79	10	37	72	-	-	1	
Kamptee - - - - -	921	8	48	-	-	-	44	29	4	37	24	1	-	3	
Cannanore - - - - -	74	-	2	-	-	-	6	6	-	11	17	-	-	3	
Trichinopoly - - - - -	33	1	9	-	-	1	16	19	11	41	49	1	-	2	
Vellore - - - - -	180	2	8	-	-	1	20	26	6	18	47	1	-	1	
Waltair - - - - -	79	1	-	-	-	4	30	22	14	51	43	-	-	-	
Mangalore - - - - -	74	-	2	-	-	-	22	38	-	7	40	-	-	2	
Cuddapah (a) - - - - -	145	-	5	-	-	4	17	4	12	28	21	-	-	1	
Berhampore - - - - -	88	-	-	-	-	1	16	21	16	7	102	-	-	-	
Rangoon - - - - -	118	1	1	-	-	-	48	62	-	10	48	-	-	1	
Mercara - - - - -	220	1	-	-	-	-	30	35	-	6	12	-	-	-	
Samulcottah - - - - -	124	-	3	-	-	1	8	4	4	14	18	1	-	-	
Raipoor (f) - - - - -	240	-	271	-	-	1	21	11	-	20	29	-	-	-	
Vizianagrum - - - - -	85	-	-	-	-	5	1	12	2	19	56	-	-	-	
Mysore (c) - - - - -	660	189	7	-	1	3	6	14	1	11	19	-	-	1	
Palamcottah - - - - -	81	-	-	-	-	5	12	7	1	10	29	-	-	-	
Thyetmyoo - - - - -	64	-	7	-	-	-	14	12	-	5	34	-	-	-	
Kurnool - - - - -	1,166	4	-	-	-	-	19	50	6	9	70	-	-	-	
Moulmein - - - - -	22	1	-	-	-	3	45	58	-	1	36	-	-	1	
Tonghoo (g) - - - - -	81	1	-	-	-	-	42	29	-	6	8	-	-	1	
Singapore (g) - - - - -	545	-	-	-	-	-	19	28	-	6	22	-	-	-	
Penang - - - - -	55	-	11	-	-	-	11	35	-	2	13	1	-	-	
Cuttack - - - - -	222	2	-	-	-	3	14	3	3	9	40	-	-	-	
Quilon - - - - -	27	-	-	-	-	-	4	2	-	5	15	1	-	-	
Seetabuldee - - - - -	386	2	110	-	1	-	25	11	1	26	22	-	-	1	
Hoosingabad - - - - -	247	-	-	-	-	-	1	13	-	19	33	-	-	-	
Sumbulpoor - - - - -	981	-	-	-	-	1	19	3	19	9	25	-	-	2	
Harryhur - - - - -	35	-	1	-	-	1	1	12	7	5	5	2	-	1	
Port Blair - - - - -	49	-	-	-	-	-	28	7	-	10	28	-	-	1	
Malacca - - - - -	18	-	-	-	-	-	1	6	-	2	12	-	-	-	
St. Thomas' Mount - - - - -	66	-	-	-	-	-	12	14	-	5	17	-	-	-	
Trichoor - - - - -	15	-	-	-	-	-	4	-	-	2	9	-	-	-	
Palaveram - - - - -	46	1	-	-	-	-	5	26	1	3	32	-	-	1	
Wynaen (d) - - - - -	106	-	-	-	-	4	3	12	-	5	7	-	-	-	
Chandah (a) - - - - -	167	-	-	-	-	-	10	2	-	18	18	-	-	-	
Labuan (e) - - - - -	310	2	-	-	-	-	6	8	-	-	17	-	-	-	
Seroncha - - - - -	83	-	-	-	-	-	18	13	-	5	20	-	-	2	
Shoagheen - - - - -	189	4	1	-	-	-	3	-	-	1	11	-	-	2	
Mootoor (b) - - - - -	45	-	1	-	-	-	2	1	-	-	10	1	-	-	
Chindwarrah (b) - - - - -	29	-	1	-	-	-	-	-	-	3	5	-	-	-	
Trivandrum - - - - -	1	-	-	-	-	-	-	2	-	4	-	-	-	-	

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

V.—TABLE showing the principal DISEASES which have contributed to make up the DEATHS in HOSPITAL during the Year 1866, at each Station.

STATIONS.	Deaths from															
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Ophthalmia.	Rheumatism.	Ebriosis.	Tubercular Diseases.	Respiratory Diseases.	Delirium Tremens.	Hepatic Diseases.
Secunderabad	5	-	1	-	-	-	2	1	6	-	-	-	1	3	-	-
Bangalore	4	3	-	-	-	1	-	1	12	-	-	-	1	-	-	1
Fort Saint George	2	1	1	-	-	-	1	4	28	-	-	-	1	2	-	-
Bellary	3	1	-	-	-	-	1	3	5	-	1	-	-	-	-	-
Kamptee	6	1	-	-	-	-	1	-	1	-	-	-	-	2	-	-
Cannanore	1	-	-	-	-	-	-	-	-	-	2	-	-	2	-	1
Trichinopoly	-	1	1	-	-	-	-	1	7	-	-	-	2	1	-	-
Vellore	1	-	-	-	-	-	1	-	2	-	-	-	-	1	-	-
Waltair	-	-	-	-	-	-	2	1	5	-	-	-	1	1	-	-
Mangalore	-	-	-	-	-	-	4	1	-	-	-	-	1	-	-	-
Cuddapah (a)	-	-	1	-	-	-	1	1	2	-	1	-	1	1	-	1
Berhampore	-	-	-	-	-	1	-	-	4	-	4	-	-	-	-	-
Rangoon	-	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-
Mercara	4	-	-	-	-	-	1	3	-	-	-	-	-	1	-	-
Samulcottah	2	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
Raipore (f)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vizianagrum	1	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-
Mysore (c)	1	1	-	-	-	-	1	1	-	-	-	-	1	-	-	-
Palamcottah	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-
Thyetmyoo	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Kurnool	2	1	-	-	-	-	1	-	2	-	-	-	2	1	-	-
Moulmein	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-
Tonghoo (g)	2	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-
Singapore (g)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Penang	1	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
Cuttack	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Quilon	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Seetabuldee	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-
Hoosingabad	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Sumbulpoor	1	-	-	-	-	-	1	-	12	-	-	-	-	1	-	1
Hurryhur	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-
Port Blair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malacca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Saint Thomas' Mount	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichoor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Palaveram	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Wynaad (d)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Chandah (a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Labuan (e)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Seroncha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shoagheen	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moottoor (b)	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Chindwarrah (b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trivandrum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

VI.—TABLE showing the Comparative Ratio of ADMISSIONS, DAILY AVERAGE SICK and MORTALITY, per 1,000 at each Station occupied by NATIVE TROOPS in the MADRAS PRESIDENCY during 1866, arranged in the order of their Sickness and Mortality.

STATIONS whose Average Annual Strength exceeds 500.

Rate of Admissions per 1,000.			Ratio of Daily Average Sick per 1,000.		Ratio of Deaths per 1,000.		
						Deaths in Hospital.	Deaths out of Hospital.
Trichinopoly - -	295.2	Palamcottah - -	9.6	Raipoor (f) - -	2.8	—	—
Cannanore - -	315.6	Cannanore - -	13.6	Thyettmyoo - -	4.4	4.4	—
Cuddapah (a) - -	425.5	Mangalore - -	14.0	Vellore - -	6.6	5.7	—
Palamcottah - -	432.0	Trichinopoly - -	14.8	Palamcottah - -	7.4	—	—
Vizianagram - -	438.1	Samulcottah - -	15.3	Cannanore - -	7.6	3.0	—
Mangalore - -	438.6	Vizianagram - -	17.7	Kamptee - -	9.0	0.6	—
Vellore - -	486.6	Mercara - -	18.8	Rangoon - -	9.4	—	—
Thyettmyoo - -	490.3	Fort St. George - -	19.1	Secunderabad - -	9.5	1.1	—
Berhampore - -	505.9	Vellore - -	20.7	Vizianagram - -	9.9	4.2	—
Moulmein - -	524.8	Thyettmyoo - -	22.8	Moulmein - -	9.9	—	—
Fort St. George - -	552.7	Cuddapah (a) - -	25.7	Cuddapah (a) - -	11.4	—	—
Waltair - -	570.7	Bangalore - -	26.6	Mercara - -	12.1	4.0	—
Bangalore - -	573.0	Waltair - -	28.2	Trichinopoly - -	12.5	1.5	—
Samulcottah - -	588.9	Kamptee - -	29.5	Mangalore - -	12.5	7.5	—
Mercara - -	592.7	Moulmein - -	30.7	Waltair - -	13.0	—	—
Bellary - -	734.2	Berhampore - -	31.6	Bellary - -	13.5	—	—
Rangoon - -	840.8	Bellary - -	32.7	Samulcottah - -	13.7	—	—
Secunderabad - -	983.5	Raipoor (f) - -	33.5	Kurnool - -	13.9	—	—
Kamptee - -	991.7	Secunderabad - -	43.7	Bangalore - -	14.4	1.8	—
Raipoor (f) - -	1106.7	Rangoon - -	49.9	Berhampore - -	15.8	—	—
Kurnool - -	2305.4	Kurnool - -	54.2	Fort St. George - -	23.2	0.4	—

STATIONS whose Average Annual Strength is under 500.

Quilon - -	407.4	Hurryhur - -	20.9	Quilon - -	6.9	2.3	—
Hurryhur - -	515.7	Quilon - -	22.3	Seetabuldee - -	7.0	—	—
Penang - -	543.9	Cuttack - -	24.7	Hoosingabad - -	7.7	—	—
Cuttack - -	993.4	Penang - -	29.6	Cuttack - -	8.8	—	—
Hoosingabad - -	1129.9	Seetabuldee - -	33.2	Penang - -	10.7	—	—
Seetabuldee - -	1755.3	Hoosingabad - -	54.2	Hurryhur - -	12.9	—	—
Sumbulpore - -	3342.2	Sumbulpore - -	89.1	Sumbulpore - -	56.5	2.9	—

STATIONS whose Average Annual Strength is under 200.

Trivandrum - -	438.4	Trivandrum - -	13.0	Seroncha - -	—	6.1	—
Trichoor - -	519.8	Trichoor - -	16.8	Trivandrum - -	—	—	—
Malacca - -	639.3	St. Thomas' Mount - -	24.3	Trichoor - -	—	—	—
St. Thomas' Mount - -	1100.0	Malacca - -	28.4	Port Blair - -	5.2	—	—
Seroncha - -	1184.0	Port Blair - -	46.5	Malacca - -	5.4	—	—
Port Blair - -	1497.3	Seroncha - -	49.9	St. Thomas' Mount - -	5.5	—	—
Chandah (a) - -	1638.6	Chandah (a) - -	53.2	Chandah (a) - -	6.0	—	—
Shoagheen - -	1905.5	Shoagheen - -	54.9	Shoagheen - -	7.8	—	—

DEPÔTS.

Palaveram - -	1534.1	Palaveram - -	199.7	Palaveram - -	45.4	—	—
---------------	--------	---------------	-------	---------------	------	---	---

STATIONS from which the Returns are not Complete for the whole Year.

Tonghoo (g) - -	698.7	Tonghoo (g) - -	29.5	Singapore (g) - -	5.3	—	—
Chindwarrah (b) - -	913.5	Chindwarrah (b) - -	33.5	Wynaad (d) - -	5.9	—	—
Singapore (g) - -	1358.2	Singapore (g) - -	31.2	Labuan (e) - -	6.0	6.0	—
Moottoor (b) - -	1370.4	Mysore (c) - -	47.4	Mysore (c) - -	7.1	—	—
Wynaad (d) - -	1434.5	Wynaad (d) - -	56.7	Tonghoo (g) - -	12.2	1.7	—
Mysore (c) - -	1489.2	Labuan (e) - -	57.6	Chindwarrah (b) - -	12.3	—	—
Labuan (e) - -	2402.4	Moottoor (b) - -	85.8	Moottoor (b) - -	37.0	—	—

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

VII.—TABLE showing the ratio of ADMISSIONS and DEATHS per 1,000 under different Classes of DISEASES at each STATION during 1866.

STATIONS.	Zymotic.		Constitutional.		Local.		Developmental.		Violence.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - - -	846.1	6.1	3.4	0.3	82.4	2.6	3.0	-	48.4	0.3
Bangalore - - -	353.1	9.4	33.7	0.4	128.8	3.1	9.4	0.9	47.2	0.4
Fort St. George - - -	380.3	18.3	6.9	0.4	117.8	4.4	10.4	-	37.1	-
Bellary - - -	473.9	9.4	6.7	1.3	114.9	2.0	22.3	0.6	116.3	-
Kamptee - - -	825.8	6.2	14.5	-	100.6	2.7	4.8	-	45.7	-
Cannanore - - -	193.1	1.5	7.6	0.7	77.5	3.8	8.3	1.5	28.8	-
Trichinopoly - - -	175.4	7.8	4.6	1.5	83.7	2.3	8.6	0.7	22.7	-
Vellore - - -	352.6	3.8	4.7	0.9	92.2	0.9	12.3	0.9	24.7	-
Waltair - - -	385.2	10.7	36.8	1.1	108.2	1.1	9.5	-	30.9	-
Mangalore - - -	269.4	7.5	3.7	1.2	132.8	2.5	10.0	1.2	2.2	-
Cuddapah (a) - - -	207.6	7.6	3.8	1.2	64.9	2.5	1.2	-	2.0	-
Berhampore - - -	378.8	10.5	5.2	-	83.4	2.6	6.6	2.6	31.7	-
Rangoon - - -	565.4	5.3	6.7	-	140.3	2.6	43.1	1.3	85.0	-
Mercara - - -	479.0	10.8	4.0	-	87.9	1.3	8.1	-	13.5	-
Samulcottah - - -	355.8	4.1	19.3	4.1	177.9	5.5	4.1	-	31.7	-
Raipore (f) - - -	865.1	-	11.2	1.4	146.0	1.4	-	-	84.2	-
Vizianagrum - - -	285.9	5.6	24.1	1.4	106.6	2.8	4.2	-	17.0	-
Mysore (c) - - -	1360.5	5.7	20.0	-	82.9	-	4.2	-	21.4	-
Palamcottah - - -	286.9	4.4	2.9	-	112.1	-	10.4	1.4	19.4	1.4
Thyetmyoo - - -	259.3	1.4	8.9	-	185.9	2.9	11.9	-	23.9	-
Kurnool - - -	2097.6	9.3	15.5	3.1	110.2	1.5	6.2	-	69.7	-
Moulmein - - -	354.3	3.3	8.2	1.6	132.4	3.3	8.2	1.6	21.5	-
Tonghoo (g) - - -	415.0	7.0	1.7	1.7	190.8	1.7	42.0	1.7	49.0	-
Singapore (g) - - -	1171.7	1.7	1.7	-	146.1	1.7	3.5	-	35.6	1.7
Penang - - -	355.4	8.5	6.4	-	130.6	-	12.8	2.1	38.5	-
Cuttack - - -	792.4	4.4	8.8	-	123.6	2.2	6.6	2.2	61.8	-
Quilon - - -	247.6	4.6	-	-	115.7	2.3	2.3	-	41.6	-
Seetabuldee - - -	1432.9	4.7	2.3	-	221.1	-	11.7	2.3	63.5	-
Hoosingabad - - -	916.3	7.7	-	-	155.8	-	-	-	57.1	-
Sumbulpore - - -	3181.5	41.6	20.8	-	98.2	14.8	-	-	41.6	-
Hurryhur - - -	380.9	8.6	17.3	4.3	112.5	-	4.3	-	60.6	-
Port Blair - - -	895.2	-	36.6	5.2	376.9	-	26.1	-	162.3	-
Malacca - - -	333.3	5.4	-	-	196.7	-	21.3	-	87.4	-
Saint Thomas's Mount - - -	750.0	-	5.5	5.5	272.2	-	5.5	-	66.6	-
Trichore - - -	237.3	-	11.3	-	231.6	-	-	-	39.3	-
Palaveram - - -	744.3	17.0	51.1	5.6	329.5	22.7	386.3	-	22.7	-
Wynaad (d) - - -	904.7	5.9	5.9	-	273.8	-	-	-	250.0	-
Chandah (a) - - -	1277.1	6.0	54.2	-	253.0	-	-	-	54.2	-
Labuan (e) - - -	2170.7	6.0	18.2	-	128.0	-	48.7	-	36.5	-
Seroncha - - -	901.8	-	18.4	-	196.3	-	-	-	67.4	-
Shoageen - - -	1661.4	7.8	-	-	181.1	-	-	-	62.9	-
Mootoor (b) - - -	1012.3	-	-	-	246.9	37.0	-	-	111.1	-
Chindwarrah (b) - - -	530.8	-	12.3	-	271.6	12.3	-	-	98.7	-
Trivandrum - - -	246.5	-	-	-	150.6	-	-	-	41.0	-

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

VIII.—TABLE showing the ratio of ADMISSIONS per 1,000 from the PRINCIPAL DISEASES admitted into HOSPITAL at each STATION during 1866.

STATIONS.	Admissions per Thousand of Strength.													
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small Pox.	Dysentery.	Diarrhoea.	Cholera.	Ophthalmia.	Rheumatism.	Ebrietas.	Delirium Tremens.	Hepatic Disease.
Secunderabad - - -	642.2	2.2	2.6	-	0.3	1.1	21.7	38.5	3.8	39.7	21.0	0.3	0.3	2.2
Bangalore - - -	137.8	7.6	13.5	-	-	11.2	15.7	19.8	10.8	35.1	40.9	-	-	1.8
Fort Saint George - -	123.8	1.9	18.3	-	-	-	24.8	34.1	26.2	13.8	36.1	-	-	1.9
Bellary - - -	169.6	2.0	22.3	-	-	0.6	52.7	53.4	6.7	25.0	48.6	-	-	0.6
Kamptee - - -	639.1	5.5	33.3	-	-	-	30.5	20.1	2.7	25.6	16.6	0.6	-	2.0
Cannanore - - -	56.2	-	1.5	-	-	-	4.5	4.5	-	8.3	12.9	-	-	2.2
Trichinopoly - - -	25.8	0.7	7.0	-	-	0.7	12.5	14.8	8.6	32.1	38.3	0.7	-	1.5
Vellore - - -	171.1	1.9	7.6	-	-	0.9	19.0	24.7	5.7	17.1	44.6	0.9	-	0.9
Waltair - - -	93.9	1.1	-	-	-	4.7	35.5	26.1	16.6	60.6	51.1	-	-	-
Mangalore - - -	92.7	-	2.5	-	-	-	27.5	47.6	-	8.7	50.1	-	-	2.5
Cuddapah (a) - - -	184.7	-	6.3	-	-	5.0	21.6	5.0	15.2	35.6	26.7	-	-	1.2
Perhampore - - -	116.5	-	-	-	-	1.3	21.1	27.9	21.1	9.2	135.0	-	-	-
Rangoon - - -	159.2	1.3	1.3	-	-	-	64.7	83.6	-	13.4	64.7	-	-	1.3
Mercara - - -	297.7	1.3	-	-	-	-	40.5	47.3	-	8.1	16.2	-	-	-
Samulcottah - - -	171.0	-	4.1	-	-	1.3	11.0	5.5	5.5	19.3	24.8	1.3	-	2.7
Raipore (f) - - -	337.0	-	380.6	-	-	1.4	29.4	16.4	-	28.0	40.7	-	-	-
Vizianagrum - - -	120.9	-	-	-	-	7.1	1.4	17.0	2.8	27.0	79.6	-	-	4.2
Mysore (c) - - -	944.2	270.3	10.0	-	1.4	4.2	8.5	20.0	1.4	15.7	27.1	-	-	1.4
Palamcottah - - -	121.1	-	-	-	-	7.4	17.9	10.4	1.4	14.9	43.3	-	-	-
Thyetmyoo - - -	95.9	-	10.4	-	-	-	20.9	17.9	-	7.4	50.9	-	-	-
Kurnool - - -	1807.7	6.2	-	-	-	-	29.4	77.5	9.3	13.7	108.5	-	-	-
Moulmein - - -	36.4	1.6	-	-	-	4.9	74.5	96.9	-	1.6	59.6	-	-	1.6
Tonghoo (g) - - -	141.8	1.7	-	-	-	-	73.5	50.7	-	10.5	14.0	-	-	1.7
Singapore (g) - - -	971.4	-	-	-	-	-	33.8	49.9	-	10.6	39.2	-	-	-
Penang - - -	117.7	-	23.5	-	-	-	23.5	74.9	-	4.2	27.6	2.1	-	-
Cuttack - - -	490.0	4.4	-	-	-	6.6	30.9	6.6	6.6	19.8	88.3	-	-	-
Quilon - - -	62.5	-	-	-	-	-	9.2	4.6	-	11.5	34.7	2.3	-	-
Seetabuldee - - -	908.2	4.7	258.8	-	2.3	-	58.8	25.8	2.3	61.1	51.7	-	-	2.3
Hoosingabad - - -	641.6	-	-	-	-	-	2.5	33.7	-	49.3	85.7	-	-	-
Sumbulpore - - -	2919.6	-	-	-	-	2.9	56.5	8.9	56.5	26.7	74.4	-	-	5.9
Hurryhur - - -	151.5	-	4.3	-	-	4.3	4.3	51.9	30.3	21.6	21.6	8.6	-	4.3
Port Blair - - -	256.5	-	-	-	-	-	146.5	36.6	-	52.3	146.5	-	-	5.2
Malacca - - -	98.3	-	-	-	-	-	5.4	32.7	-	10.9	65.5	-	-	-
Saint Thomas's Mount -	366.7	-	-	-	-	-	66.6	77.7	-	27.7	94.4	-	-	-
Trichore - - -	84.7	-	-	-	-	-	22.5	-	-	11.2	50.8	-	-	-
Palaveram - - -	261.4	5.6	-	-	-	-	28.4	147.7	5.6	17.0	181.8	-	-	5.6
Wynaad (d) - - -	630.9	-	-	-	-	23.8	17.8	71.4	-	29.2	41.6	-	-	-
Chandah (a) - - -	1006.0	-	-	-	-	-	60.2	12.0	-	108.4	108.4	-	-	-
Labuan (e) - - -	1890.2	12.1	-	-	-	-	36.5	48.7	-	-	103.6	-	-	-
Seroncha - - -	509.2	-	-	-	-	-	110.4	79.7	-	30.6	122.6	-	-	12.2
Shoagheen - - -	1488.1	31.4	7.8	-	-	-	23.6	-	-	7.8	86.6	-	-	15.7
Moottoor (b) - - -	555.5	-	12.3	-	-	-	24.6	12.3	-	-	123.4	12.3	-	-
Chindwarrah (b) - - -	358.0	-	12.3	-	-	-	-	-	-	37.0	61.7	-	-	-
Trivandrum - - -	13.7	-	-	-	-	-	-	27.3	-	56.1	-	-	-	-

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

IX.—TABLE showing the ratio of DEATHS per 1,000 from the PRINCIPAL DISEASES admitted in HOSPITAL at each STATION during 1866.

STATIONS.	Deaths per 1,000 of Strength.															
	Intermittent Fever.	Remittent Fever.	Continued Fever.	Typhus Fever.	Typhoid Fever.	Small-pox.	Dysentery.	Diarrhoea.	Cholera.	Ophthalmia.	Rheumatism.	Ebricitas.	Tubercular Diseases.	Respiratory Diseases.	Delirium Tremens.	Hepatic Diseases.
Secunderabad	1.9	—	0.3	—	—	—	0.7	0.3	2.2	—	—	—	0.3	1.1	—	—
Bangalore	1.8	1.3	—	—	—	0.4	—	0.4	5.4	—	—	—	0.4	—	—	0.4
Fort St. George	0.9	0.4	0.4	—	—	—	0.4	1.9	14.8	—	—	—	0.4	0.9	—	—
Bellary	2.0	0.6	—	—	—	—	0.6	2.0	3.3	—	0.6	—	—	—	—	—
Kamptee	4.1	0.6	—	—	—	—	0.6	—	0.6	—	—	—	—	—	—	—
Cannanore	0.7	—	—	—	—	—	—	—	—	—	1.5	—	—	1.5	—	0.7
Trichinopoly	—	0.7	0.7	—	—	—	—	0.7	5.4	—	—	—	1.5	0.7	—	—
Vellore	0.9	—	—	—	—	—	0.9	—	1.9	—	—	—	—	0.9	—	—
Waltair	—	—	—	—	—	—	2.3	1.1	5.9	—	—	—	1.1	1.1	—	—
Mangalore	—	—	—	—	—	—	5.0	1.2	—	—	—	—	1.2	—	—	—
Cuddapah (a)	—	—	1.2	—	—	—	1.2	1.2	2.5	—	1.2	—	1.2	1.2	—	1.2
Berhampore	—	—	—	—	—	1.3	—	—	5.2	—	2.6	—	—	—	—	—
Rangoon	—	—	—	—	—	—	4.0	1.3	—	—	—	—	—	—	—	—
Mercara	5.4	—	—	—	—	—	1.3	4.0	—	—	—	—	—	1.3	—	—
Samulcottah	2.7	—	—	—	—	—	—	—	1.3	—	—	—	—	1.3	—	—
Raipore (f)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vizianagrum	1.4	—	—	—	—	—	—	—	1.4	—	2.8	—	—	—	—	—
Mysore (c)	1.4	1.4	—	—	—	—	1.4	1.4	—	—	—	—	1.4	—	—	—
Palamcottah	—	—	—	—	—	—	1.4	1.4	1.4	—	—	—	—	—	—	—
Thyettmyoo	—	—	—	—	—	—	—	—	—	—	—	—	—	1.4	—	—
Kurnool	3.1	1.5	—	—	—	—	1.5	—	3.1	—	—	—	3.1	1.5	—	—
Moulmein	—	—	—	—	—	1.6	—	—	—	—	1.6	—	—	—	—	—
Tonghoo (g)	3.5	—	—	—	—	—	3.5	—	—	—	—	—	1.7	—	—	—
Singapore (g)	—	—	—	—	—	—	1.7	—	—	—	—	—	—	—	—	—
Penang	2.1	—	—	—	—	—	—	6.4	—	—	—	—	—	—	—	—
Cuttack	2.2	—	—	—	—	—	—	—	—	—	—	—	—	2.2	—	—
Quilon	2.3	—	—	—	—	—	—	—	—	—	—	2.3	—	—	—	—
Seetabuldee	—	—	—	—	—	—	—	2.3	2.3	—	—	—	—	—	—	—
Hoosingabad	—	—	—	—	—	—	—	—	—	—	2.5	—	—	—	—	—
Sumbulpore	2.9	—	—	—	—	—	2.9	—	35.7	—	—	—	—	2.9	—	2.9
Hurryhur	—	—	—	—	—	—	—	—	8.6	—	—	—	4.3	—	—	—
Port Blair	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Malacca	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Saint Thomas's Mount	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trichore	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Palaveram	5.6	5.6	—	—	—	—	—	—	—	—	—	—	5.6	5.6	—	—
Wynaad (d)	—	—	—	—	—	—	5.9	—	—	—	—	—	—	—	—	—
Chandah (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Labuan (e)	—	—	—	—	—	—	6.0	—	—	—	—	—	—	—	—	—
Seroncha	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Shoagheen	—	7.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Moottoor (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	24.6	—	—
Chindwarrah (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trivandrum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(a) Up to 28th December only.

(b) For 23 weeks only.

(c) For 47 weeks only.

(d) For 27 weeks only.

(e) For 44 weeks only.

(f) For 51 weeks only.

(g) For 43 weeks only.

X.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the First Quarter (January, February, March) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhœa.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 to Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - -	176	-	5	-	14	-	2	-	2	-	255	-	360	2	113·4	-	160·1	0·8
Bangalore - - -	66	3	3	-	2	-	-	-	2	1	117	3	202	7	66·1	1·6	113·5	3·9
Fort Saint George - -	39	1	8	1	11	3	1	-	3	-	94	5	205	5	53·8	2·8	117·2	2·8
Bellary - - -	47	1	8	-	8	-	-	-	-	-	93	1	172	1	61·1	0·6	112·9	0·6
Kamptee - - -	405	4	5	-	8	-	-	-	-	-	432	4	513	7	300·4	2·7	356·6	4·8
Cannanore - - -	31	-	-	-	2	-	-	-	-	-	43	-	133	-	32·5	-	100·5	-
Trichinopoly - - -	14	1	5	-	2	-	2	2	-	-	34	3	70	3	25·5	2·2	52·5	2·2
Vellore - - -	51	1	6	1	5	-	-	-	-	-	81	2	118	2	84·9	2·0	123·7	2·0
Waltair - - -	15	-	5	1	2	-	1	1	-	-	42	2	92	2	51·2	2·4	112·2	2·4
Mangalore - - -	12	-	2	2	6	-	-	-	-	-	40	2	66	2	50·0	2·5	82·5	2·5
Cuddapah - - -	39	1	1	-	1	1	-	-	-	-	46	2	73	3	91·6	3·9	145·3	5·9
Berhampore - - -	24	-	-	-	7	-	14	4	-	-	73	7	102	8	95·0	9·1	132·7	10·4
Rangoon - - -	36	-	18	1	13	1	-	-	-	-	103	2	175	2	138·8	2·6	235·8	2·6
Mercara - - -	24	1	11	-	3	-	-	-	-	-	46	1	88	2	63·8	1·3	122·0	2·7
Samulcottah - - -	32	1	1	-	1	-	-	-	-	-	47	1	105	4	62·8	1·3	140·3	5·3
Raipore - - -	33	-	1	-	3	-	-	-	-	-	56	-	102	-	78·6	-	143·2	-
Vizianagrum - - -	10	-	-	-	4	-	1	1	1	-	27	1	53	2	37·5	1·3	73·5	2·7
Mysore - - -	225	1	4	-	4	-	-	-	-	-	268	1	307	1	373·2	1·3	427·5	1·3
Palamcottah - - -	43	-	2	-	1	-	-	-	-	-	63	-	80	1	93·1	-	118·2	1·4
Thyetmyoo - - -	13	-	1	-	2	-	-	-	-	-	36	-	68	1	60·5	-	114·2	1·6
Kurnool - - -	105	1	1	-	-	-	-	-	-	-	123	1	165	1	212·0	1·7	284·4	1·7
Moulmein - - -	5	-	5	-	8	-	-	-	-	-	33	-	62	1	52·2	-	98·2	1·5
Tonghoo - - -	2	2	1	-	-	-	-	-	-	-	3	2	11	2	5·3	3·5	19·5	3·5
Singapore - - -	13	-	3	-	9	-	-	-	-	-	26	-	35	-	36·3	-	48·9	-
Penang - - -	26	-	1	-	9	-	-	-	-	-	40	-	95	1	78·1	-	185·4	1·9
Cuttack - - -	39	-	-	-	1	-	-	-	-	-	58	-	79	2	121·0	-	164·8	4·1
Quilon - - -	8	1	-	-	-	-	-	-	-	-	17	1	51	2	40·5	2·3	121·6	4·7
Seetabuldee - - -	105	-	3	-	1	-	-	-	-	-	117	-	145	-	270·2	-	334·8	-
Hoosingabad - - -	67	-	-	-	2	-	-	-	-	-	93	-	123	-	237·8	-	314·5	-
Sumbulpore - - -	60	-	3	-	2	-	19	12	-	-	90	12	107	12	263·1	35·0	312·8	35·0
Hurryhur - - -	11	-	-	-	5	-	-	-	-	-	19	-	34	-	106·1	-	189·9	-
Port Blair - - -	8	-	2	-	-	-	-	-	1	-	24	-	54	-	196·7	-	442·5	-
Malacca - - -	4	-	1	-	2	-	-	-	-	-	9	1	21	1	48·3	5·3	112·8	5·3
St. Thomas's Mount -	17	-	2	-	4	-	-	-	-	-	31	-	54	-	181·2	-	315·7	-
Trichore - - -	1	-	2	-	-	-	-	-	-	-	4	-	19	-	22·3	-	106·1	-
Palaveram - - -	12	1	3	-	8	-	-	-	-	-	32	2	71	3	135·5	8·4	300·8	12·7
Wynaad - - -	36	-	-	-	5	-	-	-	-	-	55	-	91	-	209·9	-	247·3	-
Chandah - - -	17	-	-	-	-	-	-	-	-	-	28	-	44	-	164·7	-	258·7	-
Labuan - - -	51	-	4	-	2	-	-	-	-	-	62	-	82	-	400·0	-	529·0	-
Seroncha - - -	10	-	2	-	3	-	-	-	-	-	16	-	24	-	96·9	-	145·4	-
Shoagheen - - -	26	-	-	-	-	-	-	-	-	-	30	-	38	-	217·3	-	275·3	-
Mootoor - - -	26	-	1	-	-	-	-	-	-	-	35	-	46	1	416·6	-	547·5	11·9
Trivandrum - - -	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	41·0	-

XI.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 2nd Quarter (April, May, June) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 to Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad -	187	1	3	-	16	-	1	-	1	-	246	1	363	4	89.0	0.3	131.3	1.4
Bangalore -	113	1	9	-	16	-	-	-	2	-	190	2	330	4	80.1	0.8	142.1	1.6
Fort St. George -	51	1	7	-	9	1	4	4	1	-	95	7	205	10	46.5	3.4	100.4	4.8
Bellary -	78	1	15	-	11	-	-	-	1	-	129	1	227	2	95.8	0.7	168.6	1.4
Kamptee -	261	3	7	-	2	-	-	-	1	-	288	3	348	3	203.3	2.1	245.7	2.1
Cannanore -	20	1	3	-	-	-	-	-	-	-	35	1	82	5	27.4	0.7	64.4	3.9
Trichinopoly -	5	-	1	-	2	-	-	-	1	-	37	-	73	1	33.6	-	66.3	0.9
Vellore -	26	-	5	-	9	-	-	-	-	-	63	-	115	2	59.9	-	109.4	-
Waltair -	15	-	6	-	1	-	1	-	-	-	52	1	96	1	67.3	1.2	124.3	1.2
Mangalore -	25	-	1	-	10	1	-	-	-	-	54	1	89	1	70.5	1.3	116.3	1.3
Cuddapah -	24	-	7	-	2	-	-	-	-	-	42	-	68	-	55.2	-	89.4	-
Berhampore -	6	-	2	-	1	-	2	-	-	-	33	1	61	1	46.1	1.3	85.3	1.3
Rangoon -	40	-	20	2	13	-	-	-	-	-	103	2	185	3	123.7	2.4	222.3	3.6
Mercara -	91	-	4	-	20	1	-	-	-	-	119	1	136	1	149.3	1.2	170.6	1.2
Samulcottah -	20	1	1	-	1	-	-	-	-	-	35	1	86	2	49.0	1.4	120.6	2.8
Raipore -	121	-	10	-	-	-	-	-	-	-	136	-	190	-	191.0	-	266.8	-
Vizianagrum -	18	-	-	-	-	-	1	-	-	-	41	-	75	-	58.9	-	107.9	-
Mysore -	170	-	1	1	4	-	-	-	-	-	182	1	203	2	255.2	1.4	234.7	2.8
Palamecottah -	9	-	-	-	1	-	-	-	-	-	20	-	54	-	31.4	-	84.9	-
Thyetymyoo -	14	-	5	-	2	-	-	-	-	-	27	1	76	2	39.0	1.4	109.8	2.8
Kurnool -	28	-	3	1	6	-	5	2	-	-	63	3	97	4	99.0	4.7	152.5	6.2
Moulmein -	5	-	5	-	6	-	-	-	-	-	32	-	60	-	52.6	-	98.6	-
Tonghoo -	14	-	1	-	6	-	-	-	1	-	25	-	44	2	44.2	-	77.3	3.5
Singapore -	173	-	7	-	12	-	-	-	-	-	203	-	261	-	394.9	-	507.7	-
Penang -	19	-	7	-	5	-	-	-	-	-	36	-	54	-	72.1	-	108.2	-
Cuttack -	17	1	1	-	-	-	1	-	-	-	45	1	82	1	105.8	2.3	192.9	2.3
Quilon -	7	-	-	-	1	-	-	-	-	-	18	-	42	1	42.3	-	98.8	4.7
Seetabuldee -	117	-	1	-	4	1	-	-	1	-	138	1	176	1	324.7	2.3	414.1	2.3
Hoosingabad -	18	-	-	-	-	-	-	-	-	-	37	1	63	2	94.6	2.5	161.1	5.1
Sumbulpore -	132	1	2	-	-	-	-	-	2	1	144	1	157	4	450.0	3.1	490.6	12.5
Hurryhur -	7	-	-	-	4	-	7	2	-	-	18	2	28	2	101.1	11.2	157.3	11.2
Port Blair -	16	-	7	-	3	-	-	-	-	-	36	-	67	-	168.9	-	314.5	-
Malacca -	2	-	-	-	3	-	-	-	-	-	10	-	28	-	64.1	-	179.4	-
St. Thomas's Mount -	6	-	3	-	6	-	-	-	-	-	26	-	54	-	140.5	-	291.8	-
Trichore -	2	-	-	-	-	-	-	-	-	-	5	-	16	-	28.5	-	91.4	-
Palaveram -	12	-	2	-	-	-	-	-	-	-	27	-	76	2	166.6	-	469.1	12.3
Chandah -	10	-	4	-	1	-	-	-	-	-	24	-	43	-	147.2	-	263.8	-
Labuan -	97	-	1	-	2	-	-	-	-	-	106	-	119	-	731.0	-	820.6	-
Seroncha -	6	-	3	-	2	-	-	-	-	-	13	-	26	-	82.2	-	164.5	-
Shoaheen -	17	-	-	-	-	-	-	-	-	-	20	-	22	-	157.4	-	173.4	-
Moottoor -	20	-	1	-	1	-	-	-	-	-	45	-	65	2	569.6	-	822.7	25.3
Chindwarrah -	2	-	-	-	-	-	-	-	-	-	3	-	5	-	37.0	-	61.7	-
Trivandrum -	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	95.8	-

XII.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 3rd Quarter (July, August, September) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhoea.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 to Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - -	868	1	31	-	48	-	5	4	1	-	1,035	5	1,164	5	368.3	1.7	414.2	1.7
Bangalore - - -	106	1	10	-	18	-	20	9	-	-	241	11	425	11	97.1	4.4	171.5	4.4
Fort St. George -	108	1	18	-	34	-	35	18	-	-	251	19	394	24	117.6	8.8	184.7	11.2
Bellary - - - -	80	2	40	-	43	2	10	5	-	-	221	9	382	11	150.4	6.1	260.0	7.4
Kamptee - - - -	142	-	30	-	16	-	4	1	-	-	229	1	307	1	157.1	0.6	210.7	0.6
Cannanore - - -	14	-	3	-	2	-	-	-	-	-	23	-	83	3	17.5	-	63.5	2.2
Trichinopoly - -	11	1	8	-	8	1	-	-	1	-	47	2	109	5	35.9	1.5	83.3	3.8
Vellore - - - -	61	-	4	-	6	-	3	2	1	-	99	2	144	2	89.4	1.8	130.0	1.8
Waltair - - - -	24	-	16	-	12	1	7	1	-	-	111	2	156	3	133.4	2.4	187.5	3.6
Mangalore - - -	22	-	11	1	14	-	-	-	-	-	60	1	102	1	74.7	1.2	127.0	1.2
Cuddapah - - -	27	-	3	1	-	-	9	2	-	-	58	3	78	4	46.8	2.4	63.1	3.2
Berhampore - - -	36	-	10	-	7	-	-	-	-	-	94	-	133	2	124.0	-	175.4	2.6
Rangoon - - - -	25	-	5	-	31	-	-	-	-	-	88	-	151	2	126.4	-	216.9	2.8
Mercara - - - -	51	2	10	1	5	1	-	-	-	-	69	5	93	5	95.9	6.9	129.3	6.9
Samulcottah - -	33	-	3	-	1	-	4	1	-	-	52	1	111	1	73.5	1.4	157.0	1.4
Raipore - - - -	101	-	8	-	4	-	-	-	-	-	123	-	167	-	2.7	-	234.5	-
Vizianagrum - -	37	1	1	-	3	-	-	-	1	-	80	1	108	2	113.9	1.4	153.8	2.8
Mysore - - - -	85	-	-	-	4	-	1	-	1	-	105	-	131	-	152.8	-	190.6	-
Palamcottah - -	6	-	1	-	1	-	-	-	-	-	24	-	70	1	35.7	-	104.3	1.4
Thyenniyoo - -	29	-	5	-	6	-	-	-	-	-	51	-	75	-	73.5	-	108.2	-
Kurnool - - - -	79	-	2	-	21	-	-	-	-	-	132	-	171	1	193.5	-	250.7	1.4
Moulmein - - -	10	-	26	-	17	-	-	-	-	-	59	-	85	-	98.4	-	141.9	-
Tonghoo - - - -	21	-	33	-	13	-	-	-	-	-	76	-	146	-	128.1	-	246.2	-
Singapore - - -	174	-	2	-	3	-	-	-	-	-	194	-	229	1	379.6	-	448.1	1.9
Penang - - - -	14	-	-	-	8	2	-	-	-	-	28	2	41	2	68.9	4.9	100.9	4.9
Cuttack - - - -	60	-	12	-	1	-	2	-	-	-	102	-	122	1	231.8	-	277.2	2.2
Quilon - - - -	5	-	-	-	1	-	-	-	-	-	8	-	29	-	17.8	-	64.7	-
Seetabuldee - -	132	-	18	-	6	-	1	1	-	-	177	1	223	2	422.4	2.3	532.2	4.7
Hoosingabad - -	56	-	-	-	6	-	-	-	-	-	83	-	105	-	217.2	-	274.8	-
Sumbulpore - -	188	-	8	-	-	-	-	-	-	-	209	-	230	1	611.1	-	672.5	2.9
Hurryhur - - -	12	-	1	-	2	-	-	-	1	-	19	-	41	1	72.5	-	516.4	3.8
Port Blair - - -	17	-	14	-	1	-	-	-	-	-	50	-	82	1	232.5	-	381.3	4.6
Malacca - - - -	5	-	-	-	1	-	-	-	-	-	14	-	31	-	73.2	-	162.3	-
St. Thomas's Mount	21	-	2	-	1	-	-	-	-	-	33	-	44	-	182.3	-	243.0	-
Trichore - - - -	3	-	1	1	-	-	-	-	-	-	7	-	19	-	39.5	-	107.3	-
Palaveram - - -	11	-	-	-	9	-	1	-	-	-	31	-	60	1	198.7	-	384.6	6.4
Wynaad - - - -	22	-	-	-	-	-	-	-	-	-	25	-	38	-	122.5	-	186.2	-
Chandah - - - -	37	-	5	1	-	-	-	-	-	-	46	-	61	-	278.7	-	369.6	-
Labuan - - - -	166	-	1	1	2	-	-	-	-	-	117	1	127	1	653.6	5.5	709.4	5.5
Seroncha - - - -	11	-	7	-	4	-	-	-	-	-	35	-	49	-	214.7	-	300.6	-
Shoagheen - - -	67	1	1	-	-	-	-	-	-	-	70	1	77	1	555.5	7.9	611.1	7.9
Chindwarrah - -	19	-	-	-	-	-	-	-	-	-	25	-	48	1	308.6	-	592.5	12.3
Trivandrum - - -	-	-	-	-	2	-	-	-	-	-	7	-	14	-	95.8	-	191.7	-

XIII.—TABLE showing the ADMISSIONS and DEATHS from SPECIAL DISEASES during the 4th Quarter (October, November, December) 1866, at each STATION of the MADRAS PRESIDENCY.

STATIONS.	Fevers.		Dysentery.		Diarrhœa.		Cholera.		Hepatitis.		All Miasmatic Diseases.		All Diseases.		Ratio per 1,000 to Strength.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	All Miasmatic.		All Diseases.	
															Admissions.	Deaths.	Admissions.	Deaths.
Secunderabad - -	465	4	18	2	23	1	2	2	2	-	582	9	689	14	217.4	3.3	257.8	5.2
Bangalore - -	68	1	7	-	8	-	4	3	-	-	152	5	315	10	67.1	2.2	139.1	4.4
Fort St. George - -	93	-	17	-	15	-	13	6	-	-	184	6	312	8	85.4	2.7	144.8	3.7
Bellary - -	79	-	15	1	17	1	-	-	-	-	155	3	305	6	98.2	1.9	193.4	3.8
Kamptee - -	169	-	2	1	3	-	-	-	-	-	198	1	261	2	136.4	0.6	179.8	1.3
Cannanore - -	11	-	-	-	2	-	-	-	3	1	34	1	117	2	25.0	0.7	86.0	1.4
Trichinopoly - -	13	-	2	-	7	-	9	5	-	-	70	5	125	7	51.2	3.6	91.5	5.1
Vellore - -	52	-	5	-	6	-	3	-	-	-	93	-	135	1	84.7	-	123.0	0.9
Waltair - -	26	-	3	1	7	-	5	3	-	-	80	4	136	5	84.9	4.2	144.3	5.3
Mangalore - -	17	-	8	1	8	-	-	-	2	-	51	2	93	6	61.9	2.4	113.0	7.2
Cuddapah - -	60	-	6	-	2	-	3	-	1	1	97	1	115	2	151.0	1.5	17.9	3.1
Berhampore - -	22	-	4	-	6	-	-	-	-	-	56	-	86	1	71.8	-	110.2	1.2
Rangoon - -	19	-	5	-	5	-	-	-	1	-	43	-	112	-	61.8	-	161.1	-
Mercara - -	55	1	6	-	7	-	-	-	-	-	76	1	121	1	105.5	1.3	168.0	1.3
Samulcottah - -	42	-	3	-	1	-	-	-	2	-	74	-	125	3	100.9	-	170.5	4.0
Raipore - -	256	-	2	-	4	-	-	-	-	-	281	-	329	2	394.6	-	462.0	2.8
Vizianagrum - -	20	-	-	-	5	-	-	-	1	-	46	2	72	3	66.1	2.8	103.5	4.3
Mysore - -	377	1	1	-	2	1	-	-	-	-	387	2	400	2	572.4	2.9	591.7	2.9
Palamcottah - -	23	-	9	1	4	1	1	1	-	-	53	3	85	3	76.7	4.3	123.0	4.3
Thyetyyoo - -	15	-	3	-	2	-	-	-	-	-	28	-	75	-	40.7	-	109.1	-
Kurnool - -	958	2	13	-	23	-	-	-	-	-	1,017	2	1,054	3	1495.5	2.9	1550.0	4.4
Moulmein - -	3	-	9	-	27	-	-	-	1	-	52	2	110	5	89.9	3.4	190.0	8.6
Tonghoo - -	45	-	7	2	10	-	-	-	-	-	80	2	198	3	141.8	3.5	351.1	5.3
Singapore - -	185	-	7	1	4	-	-	-	-	-	210	1	237	2	417.4	1.9	471.1	3.9
Penang - -	7	1	3	-	13	1	-	-	-	-	35	2	64	2	77.7	4.4	142.2	4.4
Cuttack - -	108	-	1	-	1	-	-	-	-	-	131	-	167	-	208.5	-	357.6	-
Quilon - -	7	-	4	-	-	-	-	-	-	-	21	-	54	-	48.0	-	123.5	-
Seetabuldee - -	144	-	3	-	-	-	-	-	-	-	161	-	192	-	380.6	-	453.9	-
Hoosingabad - -	106	-	1	-	5	-	-	-	-	-	126	-	144	1	335.1	-	382.9	2.6
Sumbulpore - -	601	-	6	1	1	-	-	-	-	-	616	1	629	2	1806.4	2.9	1844.5	5.8
Hurryhur - -	6	-	-	-	1	-	-	-	-	-	14	-	30	-	45.7	-	98.0	-
Port Blair - -	8	-	5	-	3	-	-	-	-	-	34	-	83	-	158.1	-	376.7	-
Malacca - -	7	-	-	-	-	-	-	-	-	-	11	-	37	-	55.5	-	86.8	-
St. Thomas's Mount - -	22	-	5	-	3	-	-	-	-	-	34	-	46	1	187.8	-	254.1	5.5
Trichore - -	9	-	1	-	-	-	-	-	-	-	15	-	38	-	83.7	-	212.2	-
Palaveram - -	12	1	-	-	7	-	-	-	1	-	28	1	63	2	185.4	6.6	417.2	13.2
Wynaad - -	48	-	3	1	7	-	-	-	-	-	61	1	112	1	297.5	4.8	546.3	4.8
Chandah - -	103	-	1	-	1	-	-	-	-	-	113	1	124	1	672.6	5.9	738.0	5.9
Labuan - -	58	-	-	-	2	-	-	-	-	-	63	-	66	-	355.9	-	372.8	-
Seroncha - -	56	-	6	-	4	-	-	-	2	-	75	-	94	-	454.5	-	569.0	-
Shoagheen - -	82	-	2	-	-	-	-	-	2	-	90	-	103	-	762.7	-	889.8	-
Chindwarrah - -	9	-	-	-	-	-	-	-	-	-	13	-	21	-	162.5	-	262.5	-
Trivandrum - -	1	-	-	-	-	-	-	-	-	-	1	-	8	-	13.6	-	109.5	-

GAOL RETURNS.

I.—TABLE showing the SICKNESS and MORTALITY among the GAOL POPULATION of the MADRAS PRESIDENCY.

GAOLS.	Average Daily Strength.	Total Gaol Population.	Admissions into Hospital.	Average Daily Sick.	TOTAL Deaths.
Bellary - - -	727	2,468	436	15·5	81
Salem - - -	717	2,452	778	32·6	42
Rajahmundry Central Gaol	481	692	462	15·9	32
Coimbatore - - -	478	595	599	17·7	28
Chittoor - - -	450	1,866	411	20·1	47
Cuddalore - - -	450	1,463	408	20·3	37
Berhampore - - -	397	2,029	509	25·0	183
Cuddapah - - -	376	1,316	600	25·5	49
Vizagapatam - - -	369	1,530	828	15·8	112
Kurnool - - -	351	1,330	520	20·1	39
Lawrence Asylum Works	336	520	282	7·3	17
Trichinopoly - - -	333	877	267	12·1	24
Calicut - - -	305	361	261	14·0	55
Mangalore - - -	283	757	803	21·1	23
Coimbatore District Gaol	278	1,731	378	16·9	26
Nellore - - -	267	1,071	307	8·9	25
Tranquebar - - -	267	749	581	21·1	16
Tinnevely - - -	264	1,078	371	11·6	27
Chingleput - - -	232	716	421	16·8	27
Madura - - -	221	1,308	271	8·4	24
Guntoor - - -	211	1,028	115	5·6	2
Vellore - - -	197	433	107	2·1	16
Paumbem - - -	176	439	153	4·3	8
Tanjore - - -	168	772	106	4·1	29
Tellicherry - - -	162	920	401	14·0	127
Ootacamund - - -	134	547	191	5·9	8
Neddiwuttum (a) - - -	131	150	71	5·2	2
Masulipatam - - -	129	341	141	6·1	4
Cannanore - - -	114	149	25	1·7	7
Rajahmundry District Gaol	103	609	233	7·0	29
Russelcondah - - -	90	447	365	10·2	26
Guindy - - -	83	93	86	2·2	1
Dodabett Chinchona Plantation.	76	122	177	3·3	—
Palghaut - - -	70	178	94	2·2	4
Cochin - - -	23	107	59	1·5	1
European Prison - - -	8	18	2	·0	—

(a) From 16th April to 31st December.

II.—TABLE showing the PRINCIPAL DISEASES which have contributed to make up the ADMISSIONS into HOSPITAL during the Year 1866.

GAOLS.	Cholera.	Small-pox.	Fevers.	Dysentery.	Diarrhoea.	Phthisis.
Bellary - - -	6	- -	44	30	80	16
Salem - - -	22	- -	234	38	69	17
Rajahmundry Central Gaol	5	- -	125	62	62	31
Coimbatore - - -	9	3	92	60	87	11
Chittoor - - -	27	- -	38	23	53	10
Cuddalore - - -	32	- -	60	56	57	2
Berhampore - - -	41	10	38	82	233	4
Cuddapah - - -	54	- -	193	79	46	6
Vizagapatam ¹¹ - - -	88	8	142	131	56	15
Kurnool - - -	4	- -	166	89	25	2
Lawrence Asylum Works	- -	18	53	64	23	33
Trichinopoly - - -	1	- -	39	70	71	1
Calicut - - -	3	- -	23	10	42	1
Mangalore - - -	3	5	347	19	85	41
Coimbatore District Gaol	2	5	49	21	50	10
Nellore - - -	- -	1	90	39	83	3
Tranquebar - - -	- -	1	139	38	85	5
Tinnevely - - -	4	- -	64	18	83	—
Chingleput - - -	27	- -	79	28	58	7
Madura - - -	21	- -	22	20	26	12
Guntoor - - -	- -	2	34	11	7	3
Vellore - - -	10	4	30	12	4	7
Paumbem - - -	- -	- -	28	2	24	9
Tanjore - - -	2	11	21	26	12	2
Tellicherry - - -	42	- -	65	45	126	1
Ootacamund - - -	- -	- -	63	17	29	9
Neddiwuttum (a) - - -	- -	- -	18	16	14	—
Masulipatam - - -	13	- -	68	3	14	2
Cannanore - - -	2	- -	6	1	4	—
Rajahmundry District Gaol	12	11	67	21	20	3
Russelcondah - - -	19	22	40	57	51	10
Guindy - - -	1	- -	39	4	5	1
Dodabett Chinchona Plantation.	- -	- -	65	- -	14	8
Palghaut - - -	- -	3	26	17	9	8
Cochin - - -	1	3	10	1	10	1
European Prison - - -	—	—	—	—	—	—

(a) From 16th April to 31st December.

III.—TABLE showing the PRINCIPAL DISEASES which have contributed to make up the DEATHS during the Year 1866.

GAOLS.	Cholera.	Small-pox.	Fevers.	Dysentery.	Diarrhoea.	Phthisis.
Bellary - - -	1	- -	3	11	18	10
Salem - - -	9	- -	5	9	5	3
Rajahmundry Central Gaol	4	- -	5	4	11	3
Coimbatore - - -	3	- -	1	4	5	—
Chittoor - - -	15	- -	2	4	9	1
Cuddalore - - -	15	- -	1	3	1	2
Berhampore - -	23	3	1	29	98	3
Cuddapah - - -	26	- -	4	3	7	4
Vizagapatam - -	54	3	4	7	11	1
Kurnool - - -	4	- -	3	13	2	—
Lawrence Asylum Works	- -	- -	- -	8	2	5
Trichinopoly - -	1	- -	- -	2	12	—
Calicut - - -	3	- -	2	- -	8	1
Mangalore - - -	2	3	1	- -	5	1
Coimbatore District Gaol	- -	- -	2	5	11	2
Nellore - - -	- -	- -	1	1	20	—
Tranquebar - - -	- -	- -	- -	3	3	1
Tinnevely - - -	1	- -	- -	5	15	—
Chingleput - - -	13	- -	- -	1	1	2
Madura - - -	10	- -	- -	2	5	—
Guntoor - - -	—	—	—	—	—	—
Vellore - - -	8	- -	- -	- -	- -	1
Paumbem - - -	- -	- -	- -	- -	2	1
Tanjore - - -	1	- -	6	5	7	—
Tellicherry - - -	32	- -	6	4	53	1
Ootacamund - - -	- -	- -	- -	2	3	—
Neddiwuttum (a) - -	- -	- -	- -	- -	2	—
Masulipatam - -	2	—	—	—	—	—
Cannanore - - -	1	- -	1	1	2	—
Rajahmundry District Gaol	5	3	- -	- -	7	—
Russelcondah - -	8	4	- -	9	3	—
Guindy - - -	1	—	—	—	—	—
Dodabett Chinchona Plantation.	—	—	—	—	—	—
Palghaut - - -	- -	- -	1	1	—	—
Cochin - - -	- -	1	—	—	—	—
European Prison - -	—	—	—	—	—	—

(a) From 16th April to 31st December.

IV.—TABLE showing the comparative RATES of ADMISSION, DAILY AVERAGE SICK and MORTALITY per 1,000 during the Year 1866, arranged in the order of Sickness and Mortality.

GAOLS whose Average Strength exceeds 300.

Ratio of Admission per 1,000.		Ratio of Daily Sick per 1,000.		Ratio of Deaths per 1,000.	
Bellary - - - -	599·7	Bellary - - - -	21·3	Lawrence Asylum - -	50·5
Trichinopoly - - -	801·8	Lawrence Asylum Works	21·7	Coimbatore - - - -	58·5
Lawrence Asylum Works -	839·2	Rajahmundry Central Gaol	33·0	Salem - - - -	58·5
Calicut - - - -	855·7	Trichinopoly - - -	36·3	Rajahmundry Central Gaol	66·5
Cuddalore - - - -	906·6	Coimbatore - - - -	37·0	Trichinopoly - - -	72·0
Chittoor - - - -	913·3	Vizagapatam - - -	42·8	Cuddalore - - - -	82·2
Rajahmundry Central Gaol	960·4	Chittoor - - - -	44·6	Chittoor - - - -	104·4
Salem - - - -	1085·0	Cuddalore - - - -	45·1	Kurnool - - - -	111·1
Coimbatore - - - -	1253·1	Salem - - - -	45·4	Bellary - - - -	111·4
Berhampore - - - -	1282·1	Calicut - - - -	45·9	Cuddapah - - - -	130·3
Kurnool - - - -	1481·4	Kurnool - - - -	57·2	Calicut - - - -	180·3
Cuddapah - - - -	1595·7	Berhampore - - -	62·9	Vizagapatam - - -	303·5
Vizagapatam - - - -	2243·7	Cuddapah - - - -	67·8	Berhampore - - - -	460·9

GAOLS whose Average Strength is under 300.

Guntoor - - - -	545·0	Guntoor - - - -	26·5	Guntoor - - - -	9·4
Nellore - - - -	1149·8	Nellore - - - -	33·3	Tranquebar - - - -	59·9
Madura - - - -	1226·2	Madura - - - -	38·0	Mangalore - - - -	81·2
Coimbatore District Gaol -	1359·7	Tinnevely - - - -	44·2	Coimbatore District Gaol	93·5
Tinnevely - - - -	1405·3	Coimbatore District Gaol	60·7	Nellore - - - -	93·6
Chingleput - - - -	1814·6	Chingleput - - - -	72·4	Tinnevely - - - -	103·0
Tranquebar - - - -	2188·0	Mangalore - - - -	74·5	Madura - - - -	108·5
Mangalore - - - -	2837·4	Tranquebar - - - -	79·0	Chingleput - - - -	116·3

GAOLS whose Average Strength is under 200.

Cannanore - - - -	219·2	European Prison - - -	—	European Prison - - -	—
European Prison - - -	250·0	Vellore - - - -	10·6	Dodabett Chinchona Plan- tation.	—
Neddiwuttum (a) - - -	541·9	Russelcondah - - -	13·3	Guindy - - - -	12·0
Vellore - - - -	543·1	Cannanore - - - -	14·9	Neddiwuttum (a) - - -	15·2
Tanjore - - - -	630·9	Tanjore - - - -	24·4	Musilipatam - - -	31·2
Paumbem - - - -	869·3	Paumbem - - - -	24·4	Cochin - - - -	43·4
Guindy - - - -	1036·1	Guindy - - - -	26·5	Paumbem - - - -	45·4
Masulipatam - - - -	1093·0	Palghaut - - - -	31·4	Palghaut - - - -	57·1
Palghaut - - - -	1342·8	Neddiwuttum (a) - - -	39·6	Ootacamund - - - -	59·7
Ootacamund - - - -	1425·3	Dodabett Chinchona Plan- tation.	43·6	Cannanore - - - -	61·4
Rajahmundry District Gaol	2262·1	Ootacamund - - - -	44·0	Vellore - - - -	81·8
Dodabett Chinchona Plan- tation.	2328·9	Masulipatam - - - -	47·2	Tanjore - - - -	172·6
Tellicherry - - - -	2474·3	Cochin - - - -	65·1	Rajahmundry District Gaol	281·5
Cochin - - - -	2565·1	Rajahmundry District Gaol	67·9	Russelcondah - - -	288·8
Russelcondah - - - -	4055·5	Tellicherry - - - -	86·4	Tellicherry - - - -	783·9

(a) From 16th April to 31st December.

V.—TABLE showing the RATIO of ADMISSIONS per 1,000 from the PRINCIPAL DISEASES admitted into HOSPITAL, during the Year 1866.

G A O L S.	Cholera.	Small-pox.	Fevers.	Dysentery.	Diarrhoea.	Phthisis.
Bellary - - -	8·2	- -	60·5	41·2	110·0	22·0
Salem - - -	30·6	- -	326·3	52·9	96·2	23·7
Rajahmundry Central Gaol	10·3	- -	259·8	128·8	128·8	64·4
Coimbatore - - -	18·8	6·2	192·4	125·5	182·0	23·0
Chittoor - - -	60·0	- -	84·4	51·1	117·7	22·2
Cuddalore - - -	71·1	- -	133·3	124·4	126·6	4·4
Berhampore - - -	103·2	25·1	95·7	206·5	586·9	10·0
Cuddapah - - -	143·6	- -	513·2	210·1	122·3	15·9
Vizagapatam - - -	238·4	21·6	384·8	355·0	151·7	40·6
Kurnool - - -	11·3	- -	472·9	253·5	71·2	5·6
Lawrence Asylum Works	- -	53·5	98·2	190·4	68·4	98·2
Trichinopoly - - -	3·0	- -	117·1	210·2	213·2	3·0
Calicut - - -	9·8	- -	75·4	32·7	137·7	3·2
Mangalore - - -	10·6	17·6	1226·1	67·1	300·3	144·8
Coimbatore District Gaol	7·1	17·9	176·2	75·5	179·8	35·9
Nellore - - -	- -	3·7	337·0	146·0	310·8	11·2
Tranquebar - - -	- -	3·7	520·5	142·3	318·3	18·7
Tinnevelly - - -	15·1	- -	242·4	68·1	314·0	—
Chingleput - - -	116·3	- -	340·3	120·6	250·0	30·1
Madura - - -	95·0	- -	99·5	90·4	117·6	54·2
Guntoor - - -	- -	9·4	161·1	52·1	33·1	14·2
Vellore - - -	50·7	20·3	152·2	60·9	20·3	35·5
Paumbem - - -	- -	- -	158·5	11·3	136·3	50·5
Tanjore - - -	11·9	65·4	125·0	154·7	71·4	11·9
Tellicherry - - -	259·2	- -	401·2	277·7	777·7	6·1
Ootacamund - - -	- -	- -	470·1	126·8	216·4	67·1
Neddivuttum (a) - - -	- -	- -	137·4	122·1	106·8	—
Masulipatam - - -	100·7	- -	527·1	23·2	108·5	15·5
Cannanore - - -	17·5	- -	52·6	8·7	35·0	—
Rajahmundry District Gaol	116·5	106·7	650·4	203·8	194·1	29·1
Russelcondah - - -	211·1	255·5	444·4	633·3	566·6	111·1
Guindy - - -	12·0	- -	469·8	48·1	60·2	12·0
Dodabett Chinchona Plan- tation.	- -	- -	855·2	- -	184·2	105·2
Palghaut - - -	- -	42·8	371·4	242·8	128·5	114·2
Cochin - - -	43·4	130·4	434·7	43·4	434·7	43·4
European Prison - - -	—	—	—	—	—	—

(a) From 16th April to 31st December.

VI.—TABLE showing the RATIO of DEATHS per 1,000 from the PRINCIPAL DISEASES admitted into HOSPITAL during the Year 1866.

G A O L S.	Cholera.	Small-pox.	Fever.	Dysentery.	Diarrhœa.	Phthisis.
Bellary - - -	1·3	- -	4·1	15·1	24·7	13·7
Salem - - -	12·5	- -	6·9	12·5	6·9	4·1
Rajahmundry Central Gaol	8·3	- -	10·3	8·5	22·8	6·2
Coimbatore - - -	6·2	- -	2·0	8·3	10·4	—
Chittoor - - -	33·3	- -	4·4	8·8	20·0	2·2
Cuddalore - - -	33·3	- -	2·2	6·6	2·2	4·4
Berhampore - - -	57·9	7·5	2·5	73·0	246·5	7·5
Cuddapah - - -	69·1	- -	10·6	7·9	18·6	10·6
Vizagapatam - - -	146·3	8·1	10·8	18·9	29·8	2·7
Kurnool - - -	11·3	- -	8·5	37·0	5·6	—
Lawrence Asylum Works	- -	- -	- -	23·8	5·9	14·8
Trichinopoly - - -	3·0	- -	- -	6·0	36·0	—
Calicut - - -	9·8	- -	6·5	- -	26·2	3·2
Mangalore - - -	7·0	10·6	3·5	- -	17·6	3·5
Coimbatore District Gaol	- -	- -	7·1	17·9	39·5	7·1
Nellore - - -	- -	- -	3·7	3·7	74·9	—
Tranquebar - - -	- -	- -	- -	11·2	11·2	3·7
Tinnevelly - - -	3·7	- -	- -	18·9	56·8	—
Chingleput - - -	56·0	- -	- -	4·3	4·3	8·6
Madura - - -	45·2	- -	- -	9·0	22·6	—
Guntoor - - -	—	—	—	—	—	—
Vellore - - -	40·6	- -	- -	- -	- -	5·0
Paumbem - - -	- -	- -	- -	- -	11·3	5·6
Tanjore - - -	5·9	- -	35·7	29·7	41·6	—
Tellicherry - - -	197·5	- -	37·0	24·6	327·1	6·1
Ootacamund - - -	- -	- -	- -	14·9	22·3	—
Neddivuttum (a) - - -	- -	- -	- -	- -	15·2	—
Masulipatam - - -	15·5	—	—	—	—	—
Cannanore - - -	8·7	- -	8·7	8·7	17·5	—
Rajahmundry District Gaol	48·5	29·1	- -	- -	67·9	—
Russelcondah - - -	88·8	44·4	- -	100·0	33·3	—
Guindy - - -	12·0	—	—	—	—	—
Dodabett Chinchona Plan- tation.	—	—	—	—	—	—
Palghaut - - -	- -	- -	14·2	14·2	—	—
Cochin - - -	- -	43·4	—	—	—	—
European Prison - - -	—	—	—	—	—	—

(a) From 16th April to 31st December.

VII.—TABLE showing the AVERAGE MORTALITY and SICKNESS in GAOLS for Five Years, from 1861 to 1865.

G A O L S.	Average Strength.	Average Gaol Population.	Average Admissions.	Average Deaths.	AVERAGE ADMISSIONS AND DEATHS FROM SPECIAL DISEASES.										AVERAGE PER MILLE.	
					Cholera.	Small-pox.	Fevers.	Dysentery.	Diarrhoea.	Phthisis.					Admissions.	Deaths.
					Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.		
Bellary -	498.6	1672.2	403.0	32.6	6.4	2.6	-	-	60.8	1.8	17.0	2.8	20.2	4.6	808.2	65.3
Cuddapah -	472.4	1311.8	441.8	26.0	11.2	6.2	4.4	0.2	128.8	3.8	31.6	2.0	19.6	4.2	985.2	55.0
Salern -	464.4	1838.2	530.4	44.0	17.2	8.4	0.6	-	135.8	1.6	26.6	4.6	32.0	7.6	1142.1	94.7
Chittoor -	437.2	1506.0	599.6	35.6	10.4	5.0	1.2	0.4	134.2	1.4	21.2	3.0	30.0	6.0	1371.4	81.4
Nellore -	388.8	1228.2	317.4	49.4	77.8	38.8	1.6	0.2	65.6	0.2	17.2	1.8	21.0	1.4	816.3	127.0
Calicut -	388.8	1445.2	595.0	115.8	56.2	34.8	36.0	7.0	83.0	5.6	30.0	6.8	89.6	17.6	1530.3	297.8
Coimbatore -	382.4	1557.0	530.8	64.6	20.2	11.6	7.2	-	90.2	4.6	50.8	14.0	67.0	18.2	1988.0	168.9
Cuddalore -	359.6	1065.4	519.4	28.0	19.2	8.2	0.6	-	113.0	1.2	51.8	2.0	59.8	1.6	1444.3	77.8
Trichinopoly -	357.6	1827.4	310.0	29.4	2.0	1.0	0.2	-	67.4	1.2	42.0	2.4	54.8	13.2	866.8	82.2
Chingleput -	394.2	927.4	305.0	23.6	5.8	2.2	0.6	-	89.2	0.4	24.2	2.4	32.4	3.8	912.6	70.6
Vizagapatam -	259.0	780.2	427.8	21.0	19.6	13.2	1.2	-	96.2	2.8	39.6	3.4	40.0	3.2	1651.7	81.0
Mangalore -	255.8	913.6	549.8	30.6	1.6	1.0	9.4	0.4	133.2	1.4	37.8	2.4	104.2	14.0	2149.3	118.4
Madura -	234.4	1078.6	376.0	48.6	31.0	17.0	0.4	-	45.0	0.4	27.6	8.4	38.4	10.2	1604.0	20.7
Guntur -	226.8	671.8	407.2	29.4	10.0	5.0	0.8	-	177.4	0.2	7.4	-	10.8	1.0	1795.4	129.6
Tinnevely -	215.8	887.0	358.4	32.0	0.2	-	1.4	-	80.6	0.4	55.2	10.0	40.6	8.6	1795.4	148.2
Berhampore -	212.8	613.4	450.8	30.6	0.2	-	32.2	-	92.6	1.8	43.4	2.2	52.6	5.8	1680.7	143.7
Kurnool -	202.0	708.4	265.8	13.0	5.2	2.2	-	-	63.2	0.2	33.8	4.0	15.4	1.4	1315.8	64.3
Vellore -	189.6	226.0	161.8	7.4	-	-	1.6	-	44.2	1.4	7.0	1.8	12.4	0.4	881.2	40.3
Tranquebar -	179.8	614.0	411.0	12.8	1.2	0.8	0.2	-	103.6	-	51.2	1.2	36.0	1.6	2285.8	71.1
Paunben -	170.2	260.8	425.8	7.6	1.0	-	1.0	-	189.2	0.6	4.0	-	22.4	1.4	2501.7	44.6
Tellicherry -	144.0	780.4	326.2	30.2	13.0	7.0	2.0	0.6	60.4	1.8	42.2	4.0	47.4	5.6	2515.2	209.7
Ootacamund -	137.2	321.2	287.2	6.0	1.4	0.4	-	-	45.4	0.6	15.2	2.6	18.4	0.8	2093.2	43.7
Masulipatam -	130.8	278.8	207.6	6.0	0.8	-	1.2	-	65.6	0.2	29.2	0.4	18.4	0.6	1587.1	45.8
Guindy -	100.4	110.4	143.8	5.4	0.2	0.2	0.2	-	58.0	-	8.0	0.4	11.4	1.8	1432.2	53.7
Cannanore -	97.6	157.6	114.0	7.6	4.0	3.2	2.6	0.4	19.4	0.2	11.2	1.8	15.2	1.0	1168.0	77.8
Cochin -	41.4	114.4	97.8	4.2	5.2	3.2	0.6	-	19.2	0.2	1.6	0.2	10.6	-	2362.3	10.1

I.—GENERAL MORTUARY STATEMENT OF THE DISTRICTS OF THE MADRAS PRESIDENCY.

DISTRICTS.	Population at last Census.	Total Deaths.	Males.	Females.	FROM DISEASE.				FROM VIOLENCE.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	REMARKS.		
					Cholera.	Small-pox.	Fever.	Age.	Other Diseases.	ACCIDENTS.				SUICIDES.							
										Drowning.	Snake-bite.	Wild Beasts.	Other Accidents.	Hanging.	Drowning.	Poison.				Other Suicides.	Murders.
Ganjam	7,02,239	38,862	21,437	17,425	15,549	3,804	5,275	587	13,521	70	22	14	41	5	3	-	1	8	55.3	22.1	See Remarks in Monthly Returns.
Ganjam Zemindary	8,14,026	17,967	10,037	7,930	9,980	1,925	1,810	357	5,220	90	13	7	27	1	-	-	1	3	57.2	29.8	See Remarks in Monthly Returns.
Vizagapatam	7,98,877	29,205	16,084	13,121	11,695	835	6,815	2,707	6,964	123	41	21	64	4	16	1	2	7	36.5	14.6	See Remarks in Monthly Returns.
Godavery	7,79,902	21,758	11,505	10,253	7,560	1,586	5,144	1,140	6,002	136	46	26	70	10	33	2	-	3	27.8	9.6	See Remarks in Monthly Returns.
Godavery Zemindary	5,49,724	20,450	10,856	9,594	8,712	1,474	4,531	740	4,717	100	35	22	62	6	27	-	-	6	37.20	158.4	See Remarks in Monthly Returns.
Kistna	7,92,744	24,069	12,712	11,357	5,591	758	3,164	2,756	11,453	169	63	6	85	6	12	1	3	3	30.3	7.05	See Remarks in Monthly Returns.
Nellore	6,13,899	14,811	7,792	7,019	1,884	474	1,756	2,320	7,027	169	67	8	72	7	19	-	-	8	22.4	3.06	See Remarks in Monthly Returns.
Nellore Zemindary	3,65,838	11,121	6,004	5,117	3,790	192	1,111	1,351	4,379	96	39	2	44	3	12	1	-	2	30.3	10.3	See Remarks in Monthly Returns.
Cuddapah	10,40,878	33,074	17,811	15,263	14,823	72	6,594	2,026	8,453	401	92	11	134	8	3	-	-	5	31.7	14.2	See Remarks in Monthly Returns.
Bellary	12,00,316	50,285	27,604	22,681	22,833	1,182	11,514	2,364	10,299	93	49	5	95	19	102	-	4	27	41.8	19.02	See Remarks in Monthly Returns.
Kurnool	7,18,865	21,401	11,644	9,757	7,085	522	6,698	1,118	5,085	151	49	27	50	4	8	2	5	1	29.7	10.6	See Remarks in Monthly Returns.
Madras	6,64,836	22,869	11,822	11,047	9,294	283	2,227	1,892	8,898	141	56	-	62	1	9	-	3	3	34.3	13.9	See Remarks in Monthly Returns.
North Arcot	10,69,685	31,947	16,722	15,225	10,475	1,451	6,273	2,072	11,159	304	100	43	53	3	1	-	1	-	29.8	9.7	See Remarks in Monthly Returns.
South Arcot	11,00,266	27,191	14,511	12,680	8,932	782	2,790	3,967	10,273	155	147	17	99	4	5	1	16	3	24.7	8.1	See Remarks in Monthly Returns.
Tanjore	15,72,703	35,577	18,527	17,050	8,978	1,284	3,906	4,618	15,234	193	252	11	92	3	-	1	1	4	22.6	5.7	See Remarks in Monthly Returns.
Trichinopoly	8,35,887	22,669	12,635	10,634	7,108	774	3,174	2,254	8,493	113	116	-	123	5	7	1	-	3	27.1	8.5	See Remarks in Monthly Returns.
Madura	17,37,495	21,513	11,841	9,672	8,229	898	3,637	1,179	6,914	489	130	14	35	10	4	1	4	2	13.3	4.7	See Remarks in Monthly Returns.
Rannad Zemindary (Ma- dura).	4,91,883	10,396	5,720	4,676	3,772	285	1,015	453	4,725	25	29	-	12	5	2	-	-	1	21.1	7.6	See Remarks in Monthly Returns.
Tinnevely	13,63,051	21,349	11,354	9,995	3,186	1,165	2,379	2,023	12,159	167	71	2	92	9	2	12	5	5	15.6	2.3	See Remarks in Monthly Returns.
Coimbatore	12,09,740	25,142	13,961	11,181	9,377	484	3,275	4,652	7,504	193	110	22	98	13	8	-	-	6	20.7	7.7	See Remarks in Monthly Returns.
Salem	14,93,221	32,308	17,437	14,871	12,593	1,117	6,900	1,113	10,104	210	109	9	108	6	4	-	2	4	21.6	8.4	See Remarks in Monthly Returns.
South Canara	7,81,767	16,817	9,038	7,779	2,429	877	4,287	1,992	6,654	162	73	34	243	23	20	5	2	16	21.5	3.1	See Remarks in Monthly Returns.
Malabar	17,16,852	35,444	19,892	15,552	4,042	835	12,562	3,755	13,371	308	181	12	263	75	6	-	3	26	20.6	2.3	See Remarks in Monthly Returns.
	2,18,44,694	5,86,225	3,16,346	2,69,879	1,97,977	23,003	1,07,846	46,836	1,98,680	3,998	1,890	313	2,029	226	303	28	53	146	26.8	9.06	

Note.—As this is the first year these Returns have been collected and compiled, they must be looked upon as only an approximation to the truth.

IV.—VIZAGAPATAM.

Number.	Months.	Population at last Census.	Total Deaths.	Males.	Females.	From Disease.				From Violence.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	
						Cholera.	Small-pox.	Fever.	Age.	Other Diseases.	Accidents.			Suicides.						
											Drowning.	Snake-bite.	Wild Beasts.	Other Accidents.	Hanging.	Drowning.	Poison.			Other Suicides.
1	1866 : January -	89,571	294	154	140	34	6	186	50	14	-	3	-	1	1	1	1	1	85	7.42
2	February -	94,244	381	217	164	154	20	177	15	13	-	-	1	1	1	1	1	1	1.63	4.04
3	March -	60,253	220	118	102	58	15	134	10	2	-	-	-	-	-	-	-	-	96	3.65
4	April -	1,00,075	602	319	283	345	29	134	13	74	2	-	-	5	1	1	1	1	3.44	6.01
5	May -	1,25,215	443	239	204	53	66	268	15	34	1	2	-	3	1	1	2	1	43	3.54
6	June -	8,25,063	966	550	416	149	54	667	4	89	2	-	1	1	1	1	1	1	18	1.17
7	* July -	13,46,923	3,424	1,901	1,523	2,149	68	519	3	670	1	11	1	10	1	1	2	2	1.59	2.54
8	† August -	14,25,652	6,213	3,483	2,730	4,784	48	324	-	1,048	4	1	1	1	1	2	1	1	3.35	4.35
9	September -	13,46,905	6,024	3,308	2,716	2,172	138	1,163	778	1,758	46	12	6	16	2	2	1	1	1.61	4.47
10	October -	14,15,652	4,892	2,637	2,255	1,176	116	1,277	707	1,500	29	11	2	10	3	1	1	1	0.8	3.45
11	November -	13,81,294	3,051	1,703	1,348	492	89	856	565	1,000	25	1	4	8	1	7	1	3	35	2.20
12	December -	14,25,652	2,695	1,455	1,240	129	176	487	1,101	762	14	-	6	9	1	2	1	1	99	1.89
		7,98,877	29,205	16,084	13,121	11,695	825	2,707	6,815	6,964	123	41	21	64	4	16	1	2	14.6	36.5

REMARKS.

Population given in 45 villages only in Survasiddhi and Golcondah Taluqs.
 Population given in 103 villages only in Survasiddhi, Golcondah and Palcondah.
 Population given in 72 villages in the above three Taluqs.
 Population given in 116 villages in the above three Taluqs.
 Population given in 59 villages and all the villages of Golcondah Taluq. This Return is of little use without a true correct return of the population.
 Population of all villages in Blindipatam, Anakapully, Veravilli, and Golcondah, are complete. Populations of 113 villages are only given in Vizagapatam, Vizianagrum, Palcondah, and Survasiddhi.
 *Population of Parvatipoor complete. Population of 500 villages are given in 13 Taluqs.
 †Population of 497 villages are given in 14 Taluqs.

V.—GODAVERY.

1	January	-	7,79,381	986	548	438	35	80	442	82	316	17	5	3	1	1	1	4	1	1	1.26	.04
2	February	-	7,79,381	991	538	453	106	180	265	71	354	6	3	1	2	2	1	3	-	-	1.27	.13
3	March	-	7,79,381	1,101	627	474	313	158	221	70	320	12	2	-	2	-	-	3	-	-	1.41	.40
4	April	-	7,79,381	1,076	583	493	301	190	153	70	337	11	-	-	8	1	-	-	-	-	1.38	.38
5	May	-	7,79,381	1,195	614	581	254	193	181	84	457	10	2	-	7	2	5	-	-	-	1.53	.32
6	June	-	7,79,381	1,483	735	748	454	175	218	73	497	10	6	7	34	3	4	-	-	2	1.90	.58
7	July	-	7,79,381	2,817	1,406	1,411	1,890	176	195	52	484	5	2	6	5	2	-	-	-	-	3.61	2.42
8	August	-	7,80,632	3,241	1,689	1,552	2,192	124	213	111	578	13	5	-	3	1	1	2	-	-	4.15	2.80
9	September	-	7,80,632	2,871	1,485	1,386	1,434	93	239	208	861	22	7	5	-	-	-	-	-	-	3.67	1.83
10	October	-	7,80,632	1,717	886	831	425	83	361	115	712	4	6	2	4	-	5	-	-	-	2.19	.54
11	November	-	7,80,632	1,689	930	759	121	73	770	116	580	22	3	-	3	-	-	-	1	-	2.16	.15
12	December	-	7,80,632	2,591	1,464	1,127	35	61	1,886	88	506	4	5	3	1	-	-	2	-	-	3.31	.04
			7,79,902	21,758	11,505	10,253	7,560	1,586	5,144	1,140	6,002	136	46	26	70	10	33	2	1	3	27.8	9.6

VI.—GODAVERY ZEMINDARY.

Number.	Months.	Population at last Census.	Total Deaths.	Males.	Females.	From Disease.				From Violence.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	REMARKS.		
						Cholera.	Small-pox.	Fever.	Age.	Other Diseases.	Accidents.				Suicides.							
											Drowning.	Snake-bite.	Wild Beasts.	Other Accidents.	Hangng.	Drowning.	Poison.				Other Suicides.	Murders.
1	1866:	5,49,724	938	947	431	10	78	519	47	246	14	5	2	2	—	—	—	—	5	1.68	—01	
2	January	5,49,724	790	411	319	95	89	204	47	278	9	3	4	4	—	—	—	—	—	1.32	—17	
3	February	5,49,724	845	466	379	179	145	173	55	272	13	2	1	1	1	1	1	1	1	1.53	—32	
4	March	5,49,724	811	430	381	186	184	124	54	248	5	1	1	1	1	1	1	1	1	1.47	—33	
5	April	5,49,724	889	474	365	211	149	117	52	287	14	4	4	4	—	—	—	—	—	1.52	—38	
6	May	5,49,724	1,570	801	769	666	202	200	51	387	7	5	4	47	—	—	—	—	—	2.85	—21	
7	June	5,49,724	2,915	1,501	1,414	2,180	143	171	51	391	6	4	4	11	1	1	1	1	1	5.30	—87	
8	July	5,49,724	2,977	1,584	1,393	2,112	101	205	58	482	6	4	3	1	1	1	1	1	1	5.41	—84	
9	August	5,49,724	3,584	1,861	1,723	2,393	88	306	116	666	4	3	1	1	1	1	1	1	1	6.51	—35	
10	September	5,49,724	1,873	997	876	615	96	425	82	634	10	4	4	1	1	1	1	1	1	8.40	—11	
11	October	5,49,724	1,368	743	625	99	81	683	47	501	1	4	—	—	—	—	—	—	—	2.48	—18	
12	November	5,49,724	2,010	1,091	919	16	118	1,454	80	325	15	—	—	—	—	—	—	—	—	3.65	—02	
	December	5,49,724	20,450	10,856	9,594	8,712	1,474	4,531	740	4,717	100	35	22	62	6	27	—	—	6	37.30	15.84	

VII.—KISTNA DISTRICT.

1	January	523	419	531	1	30	150	179	565	10	—	—	—	6	1	—	—	—	—	—	—	
2	February	442	372	462	138	67	94	145	478	13	4	4	—	6	1	—	—	—	—	—	—	
3	March	586	462	530	301	61	108	113	559	6	6	6	—	6	1	—	—	—	—	—	—	
4	April	658	530	586	258	83	125	139	581	14	3	3	—	6	1	—	—	—	—	—	—	
5	May	774	642	774	421	83	125	139	772	7	4	4	—	7	1	—	—	—	—	—	—	
6	June	1,088	1,049	1,088	521	77	203	196	1,093	14	9	9	—	20	1	—	—	—	—	—	—	
7	July	1,716	1,491	1,716	464	46	144	183	841	12	14	14	—	14	1	—	—	—	—	2.34	—63	
8	August	2,848	2,154	2,848	1,204	45	213	225	1,125	25	6	6	—	3	—	—	—	—	—	3.62	—53	
9	September	4,429	2,375	4,429	1,967	88	293	382	1,663	21	8	8	—	2	1	—	—	—	—	5.06	—24	
10	October	7,85,274	1,438	1,438	613	38	312	332	1,406	22	5	5	—	5	—	—	—	—	—	3.48	—78	
11	November	8,04,994	1,162	1,162	75	50	510	355	1,183	10	3	3	—	3	—	—	—	—	—	2.72	—00	
12	December	7,73,044	1,418	1,418	47	96	901	341	1,188	15	3	3	—	7	—	—	—	—	—	3.36	—06	
		24,069	11,357	12,712	5,591	758	3,164	2,756	11,453	169	63	6	85	6	12	1	3	3	3	30.3	7.05	

Viii.—NELLORÉ.

[illegible]

IX.—NELLORE ZEMINDARY.

[illegible]

XII.—KURNÖÖL.

[illegible]

REMARKS.

XIII.—MADRAS.

[illegible]

In June the number of villages enumerated is -	-	407
" May it was -	-	363
" April -	-	477
" March -	-	456
" February -	-	326
" January -	-	679
" December -	-	699
" November -	-	742
" October -	-	756

and all this time the "population of the villages enumerated" is stated to be 6,64,896.

*There is obviously something wrong in this.

XIV.—NORTH ARCTIC.

Number.	Months.	Population at last Census.	Total Deaths.	Males.	Females.	From Disease.					From Violence.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	REMARKS.
						Cholera.	Small-pox.	Rever.	Age.	Other Diseases.	Accidents.				Suicides.						
											Drowning.	Snake-bite.	Wild Beasts.	Other Accidents.	Hanging.	Drowning.	Poison.	Other Suicides.			
1	1866: January	10,69,685	2,303	1,268	1,035	613	119	328	141	1,064	52	4								215	57
2	February	10,69,685	1,963	1,032	931	515	254	418	201	689	31	2								183	48
3	March	10,69,685	1,508	801	707	168	58	297	170	784	19	9								140	14
4	April	10,69,685	1,340	693	647	84	84	317	135	684	25	9								125	07
5	May	10,69,685	1,368	724	644	54	33	280	91	620	41	5								127	07
6	June	10,69,685	1,937	968	1,029	446	90	401	137	802	22	6								186	41
7	July	10,69,685	2,359	1,190	1,169	802	80	421	137	875	18	20								220	74
8	August	10,69,685	3,790	1,998	1,792	2,130	72	479	151	934	15	9								354	198
9	September	10,69,685	4,011	2,083	1,928	1,809	104	745	166	1,148	27	17								374	169
10	October	10,69,685	3,168	1,647	1,521	772	159	760	163	1,160	27	14								296	72
11	November	10,69,685	3,942	2,146	1,796	1,425	160	891	299	1,220	25	6								368	133
12	December	10,69,685	4,198	2,172	2,026	1,653	228	927	251	1,109	22	3								392	154
		10,69,685	31,947	16,792	15,225	10,475	1,451	6,273	2,072	11,159	304	100	49	53	3	1				298	97

XV.—SOUTH ARCOT.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
--	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----

[illegible]

XVII.—TRICHINOPOLY.

1	January	-	8,35,887	2,573	1,347	1,236	1,144	78	304	203	639	4	6	10	1	1	-	-	3-07	1-36	In this district 139 villages deserted in different taluqs.	
2	February	-	8,35,887	1,829	971	858	597	73	307	157	535	3	13	19	1	1	-	-	2-18	1-71	In this district 68 villages deserted in different taluqs.	
3	March	-	8,35,887	1,161	615	546	290	57	260	123	347	5	7	10	1	-	1	-	1-38	1-31	In this district 139 villages deserted in different taluqs.	
4	April	-	8,35,887	1,083	878	791	551	71	309	131	576	10	13	8	-	-	-	-	1-95	1-65	In this district 134 villages deserted in different taluqs.	
5	May	-	8,35,887	1,683	855	778	520	39	246	146	645	9	8	18	-	-	-	2	1-95	1-62	In this district 139 villages deserted in different taluqs.	
6	June	-	8,35,887	1,509	775	725	384	71	229	157	618	15	12	14	-	-	-	-	1-79	1-45	In this district population of 139 villages deserted.	
7	July	-	8,35,887	2,027	1,044	983	889	37	235	171	660	14	13	8	-	-	-	-	2-42	1-06	In this district population of 139 villages deserted.	
8	August	-	8,35,887	2,047	1,077	970	731	70	204	174	795	15	7	8	-	3	-	-	2-44	1-85	In this district population of 141 villages deserted.	
9	September	-	8,35,887	1,937	1,047	920	626	42	243	214	802	12	14	7	1	-	-	-	2-35	1-74	In this district population of 137 villages deserted.	
10	October	-	8,35,887	1,828	1,000	828	450	74	240	223	816	10	9	4	-	2	-	-	2-18	1-53	In this district population of 138 villages deserted.	
11	November	-	8,35,887	2,097	1,137	960	543	77	272	240	933	10	13	7	2	-	-	-	2-50	1-64	In this district population of 138 villages deserted.	
12	December	-	8,35,887	2,398	1,289	1,049	473	85	319	315	1,127	6	1	10	-	1	-	1	2-79	1-56	In this district population of 140 villages deserted.	
		-	8,35,887	22,669	12,035	10,694	7,168	774	3,174	2,254	8,493	113	116	-	123	5	7	1	3	27-1	8-5	

XXII.—SALEM.

Number.	Months.	Population at last Census.	Total Deaths.	Males.		Females.	From Disease.				From Violence.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	REMARKS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
				Cholera.	Small-pox.		Fever.	Age.	Other Diseases.	Accidents.				Suicides.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
										Drowning.	Snake-bite.	Wild beasts.	Other Accidents.	Hangng.	Drowning.	Poison.	Other Suicides.	Murders.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1	1866:	14,93,221	2,154	1,134	1,020	819	58	514	66	666	17	2	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

XXIII.—SOUTH CANARA.

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

XXIV.—MALABAR.

Number.	Months.	Population at last Census.	Total Deaths.	Males.	Females.	From Disease.				From Violence.								Ratio of Deaths per 1,000 from all Causes.	Ratio of Deaths per 1,000 from Cholera.	REMARKS.		
						Cholera.	Small-pox.	Fever.	Age.	Other Diseases.	Accidents.				Suicides.							
											Drowning.	Snake-bite.	Wild Beasts.	Other Accidents.	Hanging.	Drowning.	Poison.				Other Suicides.	Murders.
1	1866: January	17,16,852	2,545	1,480	1,065	64	87	1,185	257	873	26	15	4	25	7	1	1	1	1	1.48	.03	
2	February	17,16,852	2,376	1,423	953	111	159	889	236	931	15	15	-	16	4	-	-	-	-	1.38	.06	
3	March	17,16,852	2,013	1,187	826	97	142	758	190	769	14	15	1	23	2	1	1	2	1	1.17	.05	
4	April	17,16,852	2,182	1,219	963	92	103	787	200	989	15	13	3	23	5	-	-	2	2	1.32	.05	
5	May	17,16,852	2,326	1,356	970	22	73	898	185	1,073	14	17	-	30	8	-	-	3	3	1.35	.01	
6	June	17,16,852	3,084	1,756	1,328	13	35	1,170	259	1,532	24	10	1	27	11	-	-	2	2	1.79	.007	
7	July	17,16,852	3,818	2,140	1,678	127	29	1,493	523	1,572	18	6	1	38	7	-	-	4	4	2.22	.07	
8	August	17,16,852	5,879	3,092	2,787	2,143	29	1,540	659	1,409	38	9	-	34	14	2	-	2	2	3.42	1.24	
9	September	17,16,852	3,836	2,078	1,758	883	39	1,141	388	1,305	34	20	-	19	4	1	-	2	2	2.23	.51	
10	October	17,16,852	2,623	1,512	1,111	242	47	824	335	1,094	44	16	2	13	4	1	-	1	1	1.52	.14	
11	November	17,16,852	2,415	1,314	1,101	181	29	859	271	995	42	20	-	10	5	1	-	2	2	1.40	.10	
12	December	17,16,852	2,347	1,335	1,012	67	63	1,018	252	879	24	25	-	10	4	-	-	5	5	1.36	.03	
		17,16,852	35,444	19,892	15,552	4,042	835	12,562	3,755	13,371	308	181	12	263	75	6	-	3	26	20.6	2.3	

SICKNESS AND MORTALITY IN THE EUROPEAN AND NATIVE ARMY, FROM 1860 TO 1865.

I.—TABLE showing the SICKNESS and MORTALITY amongst the EUROPEAN TROOPS Serving in the Eight Divisions of the MADRAS PRESIDENCY, from 1860 to 1865 inclusive.

	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength - -	13,037	14,164	13,096	12,333	12,792	12,675	1,3016·1
Admissions - - -	20,413	19,653	17,358	15,394	19,893	18,589	18,550·0
Daily sick - - -	873·1	903·3	822·8	703·9	853·5	815·1	828·6
Deaths in hospital -	214	192	208	200	226	258	216·3
Deaths out of hospital -	*	*	*	15	13	14	14·0
Invalided † - - -	647	382	355	506	845	508	540·5

SPECIAL DISEASES.

	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - -	107	42	77	37	80	41	80	39	98	33	76	38	86·3	38·3
Small-pox - - -	22	-	12	4	11	1	3	-	9	2	2	-	9·8	1·1
Fevers - - -	4,960	30	3,513	26	2,988	18	2,497	19	2,909	40	2,637	31	3250·6	27·3
Dysentery - - -	1,109	20	1,062	25	813	17	794	21	966	23	1,392	42	1022·6	24·6
Diarrhoea - - -	1,238	19	1,012	9	854	4	875	7	1,297	12	1,284	11	1093·3	10·3
All Miasmatic diseases -	8,962	102	7,467	96	6,404	80	5,694	87	7,374	111	6,989	123	7148·3	99·8
Venereal diseases - -	3,481	1	4,155	1	3,989	5	3,174	6	3,444	5	2,886	2	3521·5	3·3
Hepatic diseases - -	799	36	877	33	699	41	801	32	899	31	1,008	46	847·1	36·5

RATIO TO STRENGTH PER MILLE.

Admissions - - -	1,565·7	1,387·5	1,325·5	1,248·1	1,555·1	1,466·5	1,425·1
Daily sick - - -	66·9	63·7	62·8	57·7	66·7	64·3	63·6
Deaths in hospital -	16·4	13·5	15·8	16·2	17·6	20·3	16·9
Deaths out of hospital -	*	*	*	1·2	1·0	1·1	1·0
Invalided † - - -	57·7	35·5	28·3	40·0	65·0	38·9	44·3

SPECIAL DISEASES.

	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - -	8·2	3·2	5·4	2·6	6·1	3·1	6·4	3·1	7·6	2·5	5·9	2·9	6·6	2·9
Small-pox - - -	1·6	-	0·8	0·2	0·8	0·07	0·2	-	0·7	0·1	0·1	-	0·7	0·08
Fevers - - -	380·4	2·3	248·0	1·8	228·1	1·3	202·4	1·5	227·4	3·1	208·0	2·4	249·7	2·0
Dysentery - - -	85·0	1·5	74·9	1·7	62·0	1·2	64·3	1·7	75·5	1·7	109·8	3·3	78·5	1·8
Diarrhoea - - -	94·9	1·4	71·4	0·6	65·2	0·3	70·9	0·5	101·3	0·9	101·8	0·8	83·9	0·7
All Miasmatic diseases -	687·4	7·8	527·1	6·7	489·0	6·1	461·6	7·0	576·4	8·6	551·4	9·7	549·1	7·6
Venereal diseases - -	267·0	0·07	293·3	0·07	304·5	0·3	257·3	0·4	269·2	0·3	227·7	0·1	270·5	0·2
Hepatic diseases - -	61·2	2·7	61·9	2·3	53·3	3·1	64·9	2·5	70·2	2·4	79·5	3·6	65·0	2·8

* Furnished by Inspector General British Troops.

II.—TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS Serving in the Centre, Southern, and Mysore Divisions and Ceded Districts of the MADRAS PRESIDENCY, from 1860 to 1865 inclusive.

CENTRE DIVISION.								SOUTHERN DIVISION.						
	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	1,378	1,577	1,466	1,968	1,705	1,763	1642.8	1,559	1,699	947	707	882	999	1132.1
Admissions -	3,189	2,493	2,619	3,157	3,070	3,308	2972.6	1,793	2,124	2,013	1,073	1,445	1,341	1631.5
Daily sick -	118.3	132.7	139.5	159.5	146.4	151.7	141.3	92.5	85.6	95.4	45.5	68.5	55.6	73.8
Deaths in hospital -	48	38	44	49	61	49	48.1	28	27	13	13	15	13	18.1
Deaths out of hospital -	*	*	*	-	2	2	1.3	*	*	*	1	-	1	0.6
Admissions from cholera	18	5	9	18	29	8	14.5	6	9	-	6	1	-	3.6
Deaths from cholera -	10	1	6	9	13	3	7.0	1	7	-	4	1	-	2.1

RATIO TO STRENGTH PER MILLE.

Admissions -	2314.2	1580.8	1786.5	1604.1	1800.5	1870.6	1809.4	1150.0	1250.1	2125.6	1398.9	1638.3	1428.1	1441.1
Daily sick -	85.8	84.1	95.1	81.0	85.8	86.0	86.0	59.3	50.3	100.7	59.3	77.6	59.2	65.1
Deaths in hospital -	34.8	24.0	30.0	24.8	35.7	27.7	29.2	17.9	15.8	13.7	16.9	17.0	13.8	15.9
Deaths out of hospital -	*	*	*	-	1.1	1.1	0.7	*	*	*	1.3	-	1.0	0.5
Admissions from cholera	13.0	3.1	6.1	9.1	17.0	4.5	8.8	3.8	5.2	-	7.8	1.1	-	3.1
Deaths from cholera -	7.2	0.6	4.0	4.5	7.6	1.7	4.2	0.6	4.1	-	5.2	1.1	-	1.8

MYSORE DIVISION.

CEDED DISTRICTS.

	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	2,438	2,666	2,646	2,708	2,892	3,099	2741.5	1,062	993	1,120	1,037	1,292	1,183	1104.5
Admissions -	2,989	3,525	2,892	2,988	3,617	3,696	3284.5	1,168	1,448	1,568	1,102	2,087	1,600	1495.5
Daily sick -	166.7	194.5	163.5	134.6	148.4	153.2	160.1	47.0	56.5	74.2	59.5	110.0	91.6	73.1
Deaths in hospital -	22	35	21	31	31	39	29.8	10	9	30	15	18	32	19.0
Deaths out of hospital -	*	*	*	6	5	2	4.3	*	*	*	2	1	-	1.0
Admissions from cholera	20	49	3	4	2	7	14.1	2	6	39	8	29	29	18.8
Deaths from cholera -	11	22	2	2	1	4	7.0	-	2	17	1	-	10	5.0

RATIO TO STRENGTH PER MILLE.

Admissions -	1226.0	1322.2	1029.9	1103.3	1247.2	1192.6	1198.0	1099.8	1458.2	1400.0	1062.6	1693.9	1352.4	1354.0
Daily sick -	68.3	72.9	61.7	49.7	51.3	49.4	58.3	44.2	56.8	66.2	57.3	89.2	77.4	66.1
Deaths in hospital -	9.0	13.1	7.9	11.4	10.7	12.5	10.8	9.4	9.0	26.7	14.4	14.6	27.0	17.2
Deaths out of hospital -	*	*	*	2.2	1.7	0.6	1.5	*	*	*	1.9	0.8	-	0.9
Admissions from cholera	8.2	18.3	1.1	1.4	0.7	2.2	5.1	1.8	6.0	34.8	7.7	23.5	24.5	17.0
Deaths from cholera -	4.5	8.2	0.7	0.7	0.3	1.2	2.5	-	2.0	15.1	0.9	-	8.4	4.5

III.—TABLE showing the SICKNESS and MORTALITY amongst the EUROPEAN TROOPS Serving in the Northern Division, HYDERABAD SUBSIDIARY FORCE, and Pegu Division of the MADRAS PRESIDENCY, from 1860 to 1865 inclusive.

NORTHERN DIVISION.								HYDERABAD SUBSIDIARY FORCE.						
	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	278	243	159	134	170	22	167.6	3,171	3,361	3,376	2,370	2,605	2,581	2910.6
Admissions -	545	287	228	276	361	11	284.4	6,218	5,159	3,680	2,761	4,133	3,880	4305.1
Daily sick -	16.5	9.0	7.3	9.8	12.8	0.3	9.2	228.2	212.1	164.2	137.7	168.3	178.7	181.5
Deaths in hospital -	3	11	3	4	5	-	4.3	63	44	43	31	24	53	43.0
Deaths out of hospital -	*	*	*	-	-	-	-	*	*	*	2	-	-	0.6
Admissions from cholera	3	6	-	2	-	-	1.8	28	-	11	1	3	8	8.5
Deaths from cholera -	-	4	-	1	-	-	0.8	8	-	3	-	2	5	3.0

RATIO TO STRENGTH PER MILLE.

Admissions -	1960.0	1181.0	1433.9	2059.7	2123.5	500.0	1696.8	1960.8	1534.9	1090.0	1164.9	1586.5	1503.2	1479.1
Daily sick -	59.3	37.0	45.9	73.1	75.2	1.7	54.8	71.9	63.1	48.6	58.1	64.6	69.2	62.3
Deaths in hospital -	10.7	45.2	18.8	29.8	29.6	-	25.6	19.8	13.0	12.7	13.0	9.2	20.5	14.7
Deaths out of hospital -	*	*	*	-	-	-	-	*	*	*	0.8	-	-	0.2
Admissions from cholera	10.7	24.6	-	14.9	-	-	10.7	8.8	-	3.2	0.4	1.1	3.0	2.9
Deaths from cholera -	-	16.4	-	7.4	-	-	4.7	2.5	-	0.8	-	0.7	1.9	1.0

NAGPORE FORCE.

PEGU DIVISION.

	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	991	1,266	1,161	1,309	1,383	1,321	1238.5	2,160	2,359	2,221	2,000	1,923	1,767	2071.6
Admissions -	1,726	1,814	2,174	2,157	2,782	2,278	2155.1	2,785	2,803	2,184	1,880	2,398	2,475	2420.8
Daily sick -	67.3	62.9	65.2	60.9	89.4	80.3	71.0	136.6	150.0	113.5	96.4	109.7	103.7	118.3
Deaths in hospital -	22	13	30	17	33	31	24.3	18	15	24	40	39	41	29.5
Deaths out of hospital -	*	*	*	-	3	6	3.0	*	*	*	4	2	3	3.0
Admissions from cholera	30	1	15	5	29	16	16.0	-	1	3	36	5	8	8.8
Deaths from cholera -	12	-	12	1	13	12	8.3	-	1	1	21	3	4	5.0

RATIO TO STRENGTH PER MILLE.

Admissions -	1741.6	1432.8	1872.5	1647.8	2011.5	1724.4	1740.0	1289.3	1188.2	983.3	940.0	1247.0	1400.6	1168.5
Daily sick -	67.9	49.6	56.1	45.1	64.6	60.7	57.3	63.2	63.5	51.1	48.2	57.0	58.6	57.1
Deaths in hospital -	22.1	10.2	25.8	12.9	23.8	23.4	19.6	8.3	6.3	10.8	20.0	20.2	23.2	14.2
Deaths out of hospital -	*	*	*	-	2.1	4.5	2.4	*	*	*	2.0	1.0	1.6	1.4
Admissions from cholera	30.2	0.7	12.9	3.8	20.9	12.1	12.9	-	0.4	1.3	18.0	2.6	4.5	4.2
Deaths from cholera -	12.1	-	10.3	0.7	9.3	9.0	6.7	-	0.4	0.4	10.5	1.5	2.2	2.4

IV.—TABLE showing the SICKNESS and MORTALITY amongst the NATIVE TROOPS Serving in the Eight Divisions of the MADRAS PRESIDENCY, from 1860 to 1865 inclusive.

	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength - -	43,458	37,975	32,069	30,505	23,116	24,608	32788.5
Admissions - - -	42,002	24,996	22,280	20,992	21,416	19,963	25274.8
Daily sick - - -	1940.4	1158.6	768.7	587.2	741.3	795.2	998.5
Deaths in hospital -	632	390	301	287	352	360	387.0
Deaths out of hospital -	*	*	*	24	19	36	26.3

SPECIAL DISEASES.

	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - -	362	150	163	64	197	84	230	84	291	112	278	133	253.5	104.5
Small-pox - - -	175	9	51	1	83	4	46	6	50	2	41	1	74.3	3.8
Fevers - - -	15,569	125	8,667	64	9,050	41	8,803	39	8,359	66	8,397	54	9807.5	64.8
Dysentery - - -	1,264	48	767	25	650	15	521	11	573	14	791	16	761.0	21.5
Diarrhoea - - -	2,140	56	940	51	817	13	735	13	814	35	802	31	1041.3	33.1
All miasmatic diseases -	23,171	390	14,078	223	14,047	169	13,003	160	13,877	237	12,549	247	15120.8	237.6
Venereal diseases - -	1,905	11	1,233	8	934	4	663	2	635	1	647	3	1002.8	4.8
Hepatic diseases - -	65	1	48	6	32	2	37	1	39	4	32	3	42.1	2.8

RATIO TO STRENGTH PER MILLE.

Admissions - - -	966.4	658.2	694.7	688.1	761.7	811.2	770.8
Daily sick - - -	44.6	30.5	23.9	19.2	26.6	32.3	30.4
Deaths in hospital -	14.5	10.2	9.3	9.4	12.5	14.6	11.8
Deaths out of hospital -	*	*	*	0.7	0.6	1.4	0.8

SPECIAL DISEASES.

	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Cholera - - -	8.3	3.4	4.2	1.6	6.1	2.6	7.5	2.7	10.3	3.9	11.2	5.4	7.7	3.1
Small-pox - - -	4.0	0.2	1.3	0.02	2.5	0.1	1.5	0.1	1.7	0.07	1.6	0.04	2.2	0.1
Fevers - - -	358.2	2.8	228.2	1.6	282.2	1.2	288.5	1.2	297.3	2.3	341.2	2.1	299.1	1.0
Dysentery - - -	29.0	1.1	20.1	0.6	20.2	0.4	17.0	0.3	20.3	0.4	32.1	0.6	23.2	0.6
Diarrhoea - - -	49.2	1.2	24.7	1.3	25.4	0.4	24.9	0.4	28.9	1.2	32.5	1.2	31.7	1.0
All miasmatic diseases -	533.1	8.9	370.7	5.8	438.0	5.2	425.9	5.2	493.5	8.4	509.9	10.0	461.1	7.2
Venereal diseases - -	43.8	0.2	32.4	0.2	29.1	0.1	21.7	0.06	22.5	0.03	26.2	0.1	30.5	0.1
Hepatic diseases - -	1.4	0.02	1.2	0.1	0.9	0.06	1.2	0.01	1.3	0.1	1.3	0.1	1.2	0.08

V.—TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS Serving in the Centre, Southern, and Mysore Divisions and Ceded Districts of the MADRAS PRESIDENCY, from 1860 to 1865, inclusive.

CENTRE DIVISION.								SOUTHERN DIVISION.						
—	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	3,860	4,822	4,384	4,141	3,692	3,585	4080.6	3,799	3,350	3,122	3,532	2,686	2,644	3188.8
Admissions -	4,730	3,719	2,676	2,222	2,135	2,029	2918.5	2,566	1,689	1,346	1,556	1,352	1,073	1507.0
Daily sick -	321.1	249.4	134.9	101.9	108.3	85.7	166.7	93.0	56.5	41.8	28.3	40.4	37.4	50.4
Deaths in hospital -	83	69	51	21	46	76	57.6	68	28	37	49	17	32	38.5
Deaths out of hospital -	*	*	*	1	1	8	3.3	*	*	*	9	4	14	9.0
Admissions from cholera	40	20	40	16	24	107	41.1	54	33	40	93	12	28	44.1
Deaths from cholera -	16	7	19	4	12	43	16.8	33	17	14	28	9	17	19.6

RATIO TO STRENGTH PER MILLE.

Admissions -	1225.4	771.2	610.4	536.5	578.2	565.9	715.2	677.4	504.1	431.1	440.5	503.3	405.8	500.8
Daily sick -	83.1	51.7	30.7	24.3	29.3	23.9	40.7	25.7	16.8	13.3	8.0	15.0	14.1	15.8
Deaths in hospital -	21.5	14.3	11.6	5.0	12.4	21.1	14.1	17.8	8.3	11.8	13.8	6.3	12.1	12.0
Deaths out of hospital -	*	*	*	0.2	0.2	2.2	0.8	*	*	*	2.5	1.4	15.2	2.8
Admissions from cholera	10.3	4.1	9.1	3.8	6.5	29.8	10.0	14.2	11.3	12.8	26.3	4.4	10.5	13.8
Deaths from cholera -	4.1	1.4	4.3	0.9	3.2	11.9	4.1	8.6	5.0	4.4	7.9	3.3	6.4	6.1

MYSORE DIVISION.								CEDED DISTRICTS.						
—	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength -	7,442	6,847	6,881	6,043	6,181	6,197	6598.5	3,013	2,946	3,213	2,820	2,764	2,895	2941.8
Admissions -	5,282	4,067	4,299	3,171	4,674	4,518	4335.1	2,001	1,578	1,534	1,695	1,786	1,989	1763.8
Daily sick -	236.6	152.7	145.4	54.2	80.7	180.9	141.7	92.8	63.6	51.8	53.3	66.7	76.5	67.4
Deaths in hospital -	87	68	55	35	70	67	63.6	27	12	24	18	32	19	22.0
Deaths out of hospital -	*	*	*	4	13	10	9.0	*	*	*	1	—	—	0.3
Admissions from cholera	41	30	13	9	68	22	30.5	4	4	18	3	17	8	9.0
Deaths from cholera -	16	16	9	5	29	13	14.6	2	1	10	3	8	5	4.8

RATIO TO STRENGTH PER MILLE.

Admissions -	709.2	593.9	624.7	524.7	756.1	729.0	656.9	664.1	535.6	477.4	601.0	646.1	687.0	599.5
Daily sick -	31.7	22.3	21.1	8.9	13.0	29.1	21.4	30.7	21.5	16.1	18.8	24.1	26.4	22.9
Deaths in hospital -	11.6	9.9	7.9	5.7	11.3	10.8	9.6	8.9	4.0	7.4	6.3	11.5	6.5	7.4
Deaths out of hospital -	*	*	*	0.6	2.1	1.6	1.3	*	*	*	0.3	—	2.0	0.1
Admissions from cholera	5.5	4.3	1.8	1.4	11.0	3.5	4.6	1.3	1.3	5.6	1.0	6.1	2.7	3.0
Deaths from cholera -	2.1	2.3	1.3	0.8	4.6	2.0	2.2	0.6	0.4	3.1	1.0	2.8	1.7	1.6

VI.—TABLE showing the SICKNESS and MORTALITY amongst the NATIVE TROOPS serving in the Northern Division, HYDERABAD SUBSIDIARY FORCE, and Pegu Division of the MADRAS PRESIDENCY, from 1860 to 1865 inclusive.

NORTHERN DIVISION.								HYDERABAD SUBSIDIARY FORCE.						
	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength - -	6,281	6,742	4,756	5,150	4,670	3,789	5231.3	5,035	3,924	3,895	2,863	2,326	2,665	3451.3
Admissions - - -	6,401	3,954	2,874	3,907	3,097	2,359	3775.3	4,963	2,850	4,321	3,422	1,056	1,026	3189.6
Daily sick - - -	256.0	169.9	110.0	141.7	110.4	84.2	145.3	196.5	102.2	123.2	89.6	62.4	73.1	107.8
Deaths in hospital -	80	68	36	41	80	31	56.0	51	35	47	14	17	46	35.0
Deaths out of hospital -	* 1.2	*	*	4	—	—	1.3	*	*	*	3	—	—	1.0
Admissions from cholera	29	65	6	12	88	11	35.1	50	2	40	—	15	45	25.3
Deaths from cholera -	13	20	2	4	29	4	12.0	14	1	19	—	8	25	10.3

RATIO TO STRENGTH PER MILLE.

Admissions - - -	1019.1	586.4	604.2	770.2	663.1	622.0	721.6	985.7	726.2	1009.3	1195.2	840.9	610.1	953.1
Daily sick - - -	40.7	25.2	23.1	27.5	23.6	22.2	27.7	39.0	26.0	31.0	31.2	26.8	27.4	31.2
Deaths in hospital -	12.7	10.0	7.5	7.9	17.1	8.1	10.7	10.1	8.8	12.0	4.8	7.3	17.2	10.1
Deaths out of hospital -	*	*	*	0.7	—	—	0.2	*	*	*	1.0	—	—	0.2
Admissions from cholera	4.6	9.6	1.2	2.3	18.8	2.9	6.7	9.9	0.5	10.2	—	6.4	16.8	7.3
Deaths from cholera -	2.0	2.9	0.4	0.7	6.2	1.0	2.2	2.7	0.2	4.8	—	1.2	9.3	2.9

NAGPORE FORCE.

PEGU DIVISION.

	1860.	1861.	1862.	1863.	1864.	1865.	Average.	1860.	1861.	1862.	1863.	1864.	1865.	Average.
Average strength - -	4,277	3,329	2,506	3,195	3,113	3,089	3251.5	9,751	6,015	3,312	2,761	2,684	2,524	4507.8
Admissions - - -	3,895	2,071	2,836	3,340	3,759	4,180	3346.8	13,164	5,068	2,394	1,619	2,657	2,189	4348.5
Daily sick - - -	184.5	66.0	75.4	101.5	116.4	133.7	112.9	554.9	298.3	86.2	117.6	156.0	123.7	222.7
Deaths in hospital -	90	15	28	68	46	58	50.8	146	95	23	41	44	31	63.3
Deaths out of hospital -	*	*	*	2	1	3	2.0	*	*	*	—	—	1	0.3
Admissions from cholera	132	2	40	97	67	55	65.5	12	2	—	—	—	2	2.6
Deaths from cholera -	50	—	11	40	22	26	24.8	6	2	—	—	—	—	1.3

RATIO TO STRENGTH PER MILLE.

Admissions - - -	910.6	622.1	1131.6	1045.3	1207.5	1353.1	1029.3	1247.4	842.5	722.8	586.3	989.9	867.2	964.6
Daily sick - - -	43.1	19.8	30.0	31.7	37.3	43.2	34.7	59.6	49.4	26.0	42.5	58.1	49.0	49.4
Deaths in hospital -	21.0	4.5	11.1	21.2	14.7	18.7	15.6	14.6	15.7	6.9	14.8	16.3	12.2	14.0
Deaths out of hospital -	*	*	*	0.6	0.3	0.9	0.6	*	*	*	—	—	0.3	0.03
Admissions from cholera	30.8	0.6	15.9	30.3	21.5	17.8	20.1	1.2	0.3	—	—	—	0.7	0.5
Deaths from cholera -	11.6	—	4.3	12.5	7.0	8.4	7.6	0.6	0.3	—	—	—	—	0.2

491

EAST INDIA (SYSTEMS OF GOVERNMENT).

RETURN to an Address of the Honourable The House of Commons,
dated 17 February 1868;—for,

“ COPY of DESPATCH from the Government of *India*, dated the 26th day
of October 1867, enclosing CORRESPONDENCE respecting BRITISH and
NATIVE SYSTEMS of GOVERNMENT in *India*.”

India Office, } 20 February 1868. }	J. W. KAYE, Secretary, Political Department.
--	---

(*Sir Stafford Northcote.*)

Ordered, by The House of Commons, to be Printed,
25 February 1868.

CONTENTS.

	PAGE.
Governor General of India to Sir Stafford Northcote, 26th October 1867	3
Demi-Official Circular from J. W. S. Wyllie, Esq., Under Secretary, Foreign Department, 1st July 1867	4
Minute by R. H. Davies, Esq., Officiating Chief Commissioner of Oudh, 16th July 1867	4
Letter from Captain R. A. Cole, Superintendent of Coorg, 18th July 1867	12
" Ditto " 8th August 1867	14
" Lieutenant Colonel H. Hopkinson, Agent to the Governor General, North-East Frontier, 19th July 1867	14
" L. R. Ashburner, Esq., Magistrate of Kandeish, 21st July 1867	16
" Lieut. Col. T. Clerk, Inam Commissioner of Mysore, 22nd July 1867	17
" Gordon Forbes, Esq., Madras Civil Service, 31st July 1867	18
" Ditto ditto 3rd October 1867	18
" W. Ford, Esq., C.S.I., Commissioner, Mooltan Division, 9th August 1867	20
Memorandum by W. Ford, Esq., C.S.I., with Appendices Nos. 1 to 17, and Notes	20
Letter from W. Ford, Esq., Agent to the Lieutenant Governor of the Punjab for the Affairs of Bhawalpore, 20th August 1867	38
" Captain C. Minchin, Political Superintendent of Bhawalpore, 31st July 1867, with Appendices Nos. 1 to 4	38
" W. G. Pedder, Esq., Superintendent, Revenue Survey and Assessment, Kandeish, 16th August 1867	56
" Lieutenant Colonel W. W. Anderson, Acting Political Agent, Kattywar, 12th August 1867	64
" Major C. F. Prescott, Superintendent, Revenue Survey and Assistant in Guzerat, 15th August 1867	65
" Sir R. Temple, Resident at Hyderabad, 16th August 1867	66
Observations by Colonel H. D. Daly, Officiating Political Agent, Gwalior, 21st August 1867	79
Letter from J. H. Morris, Esq., Officiating Chief Commissioner, Central Provinces, 23rd August 1867	83
Memorandum by Colonel A. Fytche, Chief Commissioner, British Burmah, 23rd August 1867	86
Letter from Lieutenant Colonel W. F. Eden, Agent to the Governor General in Rajpootana, 23rd August 1867	90
" R. N. Cust, Esq., Member of Board of Revenue, N. W. Provinces, 24th August 1867	91
Note by Colonel R. J. Meade, Agent to the Governor General in Central India, 24th August 1867	93
Letter from Major Willoughby Osborne, C.B., Political Agent, Bhopal, 29th July 1867	97
" Captain P. W. Bannerman, Bheel Agent, Bhopawur, 1st August 1867	98
" Captain T. Cadell, V.C., Depy. Bheel Agent and Political Assistant to the Agent, Governor General for Central India, 31st July 1867	99
Memorandum by W. C. Anderson, Esq., Survey and Settlement Commissioner, Southern Mahratta Country, 24th August 1867	100
Letter from C. A. Elliott, Esq., Futtehgurh, 25th August 1867	104
" Colonel G. Ramsay, Resident in Nepal, 26th August 1867	106
Note by Lieutenant Colonel E. Thomson, 1st Assistant to Agent, Governor General, Central India, 26th August 1867	106
Letter from T. C. Hope, Esq., Surat, 28th August 1867	108
" Honble. A. A. Roberts, Judicial Commissioner, Punjab, 29th August 1867	111
" Honble. Sir D. F. Macleod, Lieutenant Governor of the Punjab, 5th September 1867	118
Note by Sir W. Muir, K.C.S.I., 22nd October 1867	121
" C. B. Thornhill, Esq., Senior Member of the Sudder Board of Revenue, N. W. Provinces, 9th November 1867	122

CORRESPONDENCE
REGARDING
THE COMPARATIVE MERITS
OF
BRITISH AND NATIVE ADMINISTRATION
IN
INDIA.

The GOVERNOR-GENERAL OF INDIA IN COUNCIL to SIR
STAFFORD NORTHCOTE, BART., Secretary of State for India.

Foreign Department.—Political.

No. 169.

Simla, October 26, 1867.

IN the debate on the Mysore Succession, which occurred in the House of Commons on the 24th of May last, Lord Cranborne took occasion to institute a comparison between the British and Native systems of government in India, and to point out certain defects which appeared to him inherent in the former. The subject thus started appeared to the Governor-General of so interesting a character, and there seemed so much to be said on the opposite side of the question, that His Excellency caused a confidential Circular to be issued by our Under Secretary in the Foreign Department, calling on various officers of mark throughout the Indian Empire to submit an expression of their respective opinions in the matter. It was His Excellency's intention to forward to you demi-officially the general results of this inquiry. But the replies which have been elicited form so valuable a collection of papers, that His Excellency is unwilling that they should be lost.

2. Therefore, we now have the honour to forward officially, for the information of Her Majesty's Government, the accompanying printed copy of all the opinions we have received on the subject; and in order that the correspondence may be complete, we also transmit a copy of the Under-Secretary's circular.

3. Among the replies which we regard as specially deserving careful perusal, we would specify those of Sir Donald M'Leod, Lieutenant-Governor of the Punjab, and Sir R. Temple, Resident at Hyderabad.

4. Referring to the remarks of Sir Donald M'Leod on the subject of rewards, we are of opinion that the dissatisfaction in the Native mind has been not so much from the absence of the grant of Jagheers as from the manner in which they were in some cases granted after the late mutinies. No uniform scale was observed. Large assignments were made sometimes to persons who had done comparatively small service, while others who had the highest claim upon the gratitude of the British Government received relatively very limited reward. And no doubt a good deal of heart-burning and jealousy has been caused by this disparity. But we are not aware that the idea is extensively prevalent that the British Government would be more popular with the masses if it conferred Jagheers. These could at the most reach but few. And if, as Sir Donald M'Leod thinks should be the case, these are never to be resumed, the frequent conferment of Jagheers would be incompatible with the stability of the land revenue.

5. We would also call your attention to the very remarkable increase in the population of British Burmah as a conclusive proof of the popularity of the Administration.

6. We have had the replies printed for circulation among the Civil officers of Government. We think that, as showing the weak points as well as the excellencies of British administration, a knowledge of their contents will be beneficial generally.

We have, &c.

(signed)

JOHN LAWRENCE,
G. N. TAYLOR,
W. MASSEY,
H. M. DURAND,
G. U. YULE.

DEMI-OFFICIAL CIRCULAR, from J. W. S. WYLLIE, Esq., Under-Secretary to the Government of India, Foreign Department.—(Dated Simla, July 1, 1867.)

You have doubtless remarked that, in the course of the recent debate in the House of Commons on the Mysore question, Lord Cranborne took occasion to doubt whether the system of British administration in India possessed, in the estimation of the Natives, any superiority over the method of government pursued in the independent States.

2. In any attempt to gauge the inclinations of the people, large allowance must of course be made for the principle of nationality. None of the various conquerors of India have been so alien to the population in colour, religion, and every other characteristic as ourselves. It would be unreasonable for us, therefore, to expect the same measure of popularity as would spontaneously accrue to a good Native ruler, or even to a chief whose administrative merits should not rise above an absence of great vices. Moreover, for one class of men—the clever, the bold, and the ambitious—the prospect which every Native State, however ill-administered, has to offer, of a “career open to talents,” must invest that form of government with attractions superior to any which our system has to offer. Indeed, our system, with the monotonous and machine-like play of its centralized power, has much about it that is repellent, especially to the upper classes. Another circumstance, not to be overlooked is, that under the influence of the tendency which all persons have to exaggerate the advantages of the “good old times,” and to feel a present inconvenience more keenly than the recollection of a past misery, those who have been the longest under British rule are, of all Natives, the least conscious of its benefits, the most alive to its petty annoyances, and the foremost to forget their previous sufferings from despotisms of their own race.

3. All these points the Viceroy freely admits. But His Excellency, nevertheless, is of opinion that the masses of the people are incontestably more prosperous and (*sua si bona norint*) far more happy in British territory than they are under Native rulers; and he considers that the present would be a good opportunity for proving this belief by a concentration of statistics from different parts of India.

4. Therefore, under His Excellency's orders, I am to request that you will be so good as to favour me with any statements on this subject which your experience may enable you to furnish. It is desirable that your reply should be received as soon as possible, say by the 1st September as the latest date; and in case circumstances should prevent your submitting a detailed report, a simple indication of the record from which you know data to be obtainable will not be without its value.

MINUTE by R. H. DAVIES, Esq., Officiating Chief Commissioner of Oudh.—
(Dated July 16, 1867.)

LORD CRANBORNE's argument appears to be this,—

A number of small well-governed States in India would be more conducive to the political and moral advancement of the people than the present British Government, because—

- (1) The rudeness and simplicity of Native administration, though intolerable in Europe, have a rough and ready efficiency well calculated for dealing with great emergencies, such as famine;
- (2) And have a fitness and geniality in the eyes of the people which compensate for any material evil which may co-exist;
- (3) Migrations of Natives from Native States to British territory are unheard of, whilst the contrary case is common;

- (4) Owing to listlessness, heavy heedlessness, and extreme centralization, the British Government is, in a considerable degree, inefficient, and occasionally productive of terrible misery, as, for instance, the Orissa famine.

The conclusion is, that the appropriate administration for India is one which will promote the happiness of the people, be suitable to their tastes, and provide for their moral development, not as Anglo-Saxons, but in their own way; and that any other must end in disastrous failure.

The Viceroy, on the other hand, is of opinion that the masses of the people are more prosperous and (*sua si bona norint*) far more happy in British territory than they are under Native rulers.

I observe, in the first place, that a rude federalism of petty States existed in Hindoostan at the time of the Mahomedan conquest. We are able to judge of the intellectual and moral development of the people at that time. The masses were prohibited from studying. The Brahmins alone had some knowledge, but no demonstration of its erroneous and limited character is required. The chief moral phenomena are the influence of caste and the social disparities and degradation of the large majority springing therefrom. The sacerdotal tribe appear to have seized the wealth of the country, for the plunder of the temples yielded to the Mahomedan invaders immense treasure and jewels.

The Mahomedan administration which succeeded extended over nearly 800 years. Its history is a continued scene of "rebellions, massacres, and barbarous conquests."

In one main respect all Indian Governments, small and large, are similarly situated. With the acquiescence of the people they derive their revenues from the surplus produce of the soil. Their respective administration of these is the true touchstone of their merits.

The petty Hindoo States must have been in a continual state of warlike preparation. Hostilities amongst themselves were always threatening or going on. Their revenues must necessarily have been spent in entertaining clansmen and militia, in superstitious endowments, and in showy retinues.

The Mahomedan Government was under similar obligations on a larger scale. But in its palmy days, and under the great Emperors, we find a considerable expenditure on works of public utility, such as roads, caravanserais, and canals. We find also occasional attempts to place the land revenue in a position to yield a great income without oppression to the cultivators. But these happier periods are rare, and for many decades before the advent of the British, the Mahomedan Government was impotent for good, and the empire in the worst state of civil and military confusion.

Possessed of the land revenue, I will not say that we have always administered it well. In Bengal it was at first oppressively assessed, then rashly limited in favour of the great zemindars to the injury of the small landholders and cultivators, then inconsiderately exacted to the ruin of these same zemindars. But the quality distinguishing ours from a native Government is, that it is capable of gradual improvement. In other parts of India, both the public right in the revenue, and the private rights of persons connected with the soil, have been more carefully maintained.

Take the case of the North-Western Provinces. The mass of the population are cultivators of the soil. In what does their happiness consist? Their physical well-being is bound up with the share of produce they can keep for themselves and their families. Under any Native rule this was liable to fluctuate at the will of the agents of Government. By our Revenue Settlement of 1833 the Government demand on the proprietors was fixed for 30 years, and in a large proportion of cases the cultivators virtually obtained fixed tenures under leases for the same period. Since then, the Ganges Canal has been made, supplying a considerable area with irrigation, rendering the yearly produce secure, a net work of roads has been thrown over the country, and a trunk line of railway traverses the whole length. We find from the census taken in 1865 that the population (excluding the Hill District of Kumaon) is 361 souls to the square mile; that it has increased during the last 10 years but slightly* if at all; that cultivation has been augmented by more than one

* It is unfortunate that more dependence cannot be placed on the census returns of the North-Western Provinces for 1853 and 1865. The latter show a slight decrease of population, and appreciable increase of cultivation, and also an increase in the proportion of the non-agricultural to the agricultural class. These results may be falsified by future returns, but if correct, they form the best evidence that society is slowly progressing, and more could not yet be hoped for.

million of acres; that the percentage of cultivation is higher than that of Great Britain. I have no doubt that statistics for the Punjab would give results still more striking; for there the area, still uncultivated, is far more extensive, and the struggle of a dense population has yet to commence. Is it probable that the same results would have accrued under any Native Government? Is it not certain that, if by a fortunate accident they were initiated, they would be destroyed by a change in a succession of rulers?

But I do not admit that, wherever the British Government limits its own demand, and consigns to a few large proprietors to deal as they please with the teeming agricultural population, it does not run a considerable risk of placing them in a position no better than that which they occupied under Native rulers.* For the rent taken from the tiller of the soil entirely settles his condition for better or worse. If a bare livelihood is left him, it is hopeless to look for material, much less mental improvement. The words of Necker became strictly applicable:—

“Après avoir établi les lois de propriété, de justice, et de liberté, on n’a presque rien fait encore pour la classe la plus nombreuse de citoyens. Que nous importent vos lois de propriété? pourraient-ils dire nous ne possédons rien; vos lois de justice? nous n’avons rien à défendre; vos lois de liberté? si nous ne travaillons pas, demain nous mourrons.”

It is, *then*, the proprietors of land, not the British Government, that decide the happiness or misery of the great bulk of the people. The British policy up to the time of the mutinies nobly availed itself of the despotic power, to which it succeeded, to place the mass of the population in a position to keep for themselves some portion of the profits of their industry. With forethought they could create capital and all the advantages which it gives rise to. It is too early to say whether they have yet done so, but it is fully proved that they have not sunk into the dangerous pauperism unhappily preying on large sections of the common people in Europe. This beneficent design was also truly politic. The classes connected with the land are in every nation those whose habits and circumstances are most unfavourable to restlessness and combination. The elements of our dominion make the quiet submission and neutrality of the majority indispensable to its prosperity. The agricultural population, contented or even passive, we may then meet on equal terms the smaller but more active and ambitious sections of the subjected races. The rural tribes, oppressed or irritated, would form the very fulcrum that has as yet always failed the conspiracies of our enemies.

The higher classes were maintained, under the Native Governments, from the land revenues, by assignments more or less valid; and as we always succeed these Governments when in their decrepitude, we invariably find the finances embarrassed by a multitude of extravagant claims. We cannot dispense with a large revenue for purposes of defence, administration, and improvement. It is a *sine qua non* of our position, and we must elect whether to grant what can be spared to those who have hitherto shared the income of the State, or to remit it in favour of the numerous class connected with the soil. To accomplish both objects in any sufficient degree is difficult, perhaps impossible.

In the first case, we may partially console a small influential section for what they have lost by the change of government; in the second we provide for the diffusion of increased wealth amongst the industrious community. The first plan was followed in Bengal and Oudh, the second to a great extent in Madras, Bombay, the North-Western Provinces, Sind, and the Punjab. It is not of small importance that the dearest associations of the people bind them to the homesteads of their birth. They

* The following observations made by Dadabhái Naoroji at a meeting of the East India Association appear to me perfectly true:—

“The mass of the people, even up to the present time, understand but little of the ‘benefits’ of British rule. To them the existing Government has always been the *Sircar*, whether it was Mahomedan, Hindoo, or British, has not mattered much. The poor labourer has hitherto had his simple criterion. If he is able to earn and enjoy his little without disturbance, and had his creed tolerated, and his feelings not hurt, all is right with him, and his ideal of a happy condition is realized, no matter who rules over him. If, on the contrary, any causes bring starvation to him, or outrage his religion or his feelings, all is wrong with him, and he curses his *raj*, be it English, Mahomedan, or Hindoo.”

The same speaker argued that the restoration of Mysore to the descendants of the Hindoo Rajah whom we set up would revive the confidence of the Native Princes in our good faith. Without saying whether our good faith was involved in the question or not, I fully admit the necessity and good policy of keeping all treaties in the sense they were made. But my decided opinion is, that the Native Princes would gladly free themselves from British control. As Sirdar Nihal Singh Chachee constantly used to say “*unki niyat aur hai*” (they are of another mind). They only await their opportunity, and look on all concessions only as so many tricks gained. It is morally impossible that they should do otherwise.

cling to the soil instinctively. Its sub-division amongst all the sons is almost universally the immemorial law both of Hindoos and Mahomedans. Its possession gives them a social status. It is parted with only in the last extremity. I am not now affirming whether the sentiment is good or bad. But it is perhaps the only prejudice which is common to all tribes and sects, and cannot safely be neglected by foreign rulers.

I am forced to make these preliminary remarks, as the manner in which the land revenue is settled is the first, second, and third consideration in the question of the prosperity of the people of India. In my view our Government will be permanently successful wherever this important question is dealt with favourably to the greater number.

I will now address myself to Lord Cranborne's argument in detail.

(1.) The simplicity of Native administration is the simplicity of unchecked despotism. If there were any guarantee for good government, the evils and inconveniences of setting up artificial barriers in a country, the geographical boundaries of which are marked by nature, would of course be lessened. But no such guarantee could be afforded. We may perhaps take Cashmere as a specimen of a small Native State. Here the Maharajah, aided by his Dewans, Jawala Sahai and Kirparam, regulates everything by his own orders. The cultivators are secure enough in their tenures, but there is no limit to the demand on them. It is impossible for them to put together capital. The wages of the shawl weavers are fixed by authority. The price of rice is settled arbitrarily at the State granaries where it has been received in satisfaction of land revenue demands. The Maharajah and his chief officers all engage in trade. Heavy export and import duties, from which they alone are exempt, are levied at the frontier and frequently again at towns. In a word it may be said that no chance of extracting money from the people is omitted. How is it spent? On troops kept up principally for show; on any fancy which the Maharajah may take into his head, or placed in a secret treasury in expectation of future events. The Maharajah is intelligent, and governs according to his lights. It is not my intention to say anything derogatory of him; but I am at a loss to conceive how a Government so constituted has any advantage over ours in dealing with an emergency like a famine. If a famine occurred elsewhere he would probably prohibit the export of grain from his own country, and I believe did so in 1861, for the Native Governments generally are too prone to regulate prices and thereby to discourage the transport of commodities.

(2.) That there is a certain fitness and congeniality in a Native Government in the eyes of the Native population may be admitted. It may be further conceded that the Brahmins and Rajpoots, who constitute an ecclesiastical and martial aristocracy, have sentiments of loyalty and attachment for a Hindoo Prince of ancient title. But they have been so many centuries under the Mahomedan yoke that these feelings are very much blunted, and to the mass of the people they are what the Magyars are to the Croats. Every people too have a preference for their own customs, and enjoy their brilliant exhibition in the persons and retinue of their Chiefs. But I believe this to be a secondary feeling. A Rajah, in a silver howdah, fanned with peacock fans, followed by a train of caparisoned elephants, is, I doubt not, rather an agreeable spectacle even to an ordinary ryot. But if his sugarcane be not cut without payment, or himself pressed as a porter, I conceive that all illusion soon vanishes from his mind. Much depends on the personal character of the Rajah, and more on that of his officers, the undeniable truth being that the bad are far more common than the good, and all enforce the feudal maxim, "*le peuple est taillable et corvéable à merci.*" To the higher classes, again, a Native Government holds out great attractions. It is a lottery in which one day or other any adventurer may draw a prize. Hope for ambition, honourable employment, a jageer, a farm of the revenue, the deputyship of a province, the command of an army, these he may chance to obtain in a Native, but cannot look for in British territory. On the other hand, the reverses are sudden and desperate. Like the Rajah of Tiloohee in Oudh, he may find this estate given in jageer to the Bhow Begum, or like the minister, Hakeem Mehdee, be compelled to cross the Ganges, or, like Ilmasali Khan, bequeath his property to his relations only by transport before his death to Furruckabad.

(3.) In migrations from one territory to another, we must know who it is who migrates before we can judge of their tendency. The condition of a mere ryot, I cannot too often repeat, is altogether determined by the nature of his tenure. If he can get land on better terms in a Native State, he will probably migrate from a populous district, though he may in future live under a worse general administra-

tion. I have heard of several ryots leaving Oudh for Nepal, where the ryot is in direct relations with the State, and has a secure tenure at a fixed proportion of the produce. I cannot, however, imagine a ryot with a right of occupancy, in even the smallest holding, migrating unless ruined. The census of the North-Western Provinces is quite sufficient evidence that there is no emigration from thence on any perceptible scale, and that what has taken place has been since the annexation, when large numbers of ryots returned to their ancestral homes from the districts adjoining Oudh. The Collector of Allahabad, reporting on the census, observes:—"The density of the population in Mouzah Chowharee was well known long ago, and was owing to the oppression in Oudh under the old régime. It is said that, for miles beyond our border, Oudh was 'be chiragh' (desolated), that the inhabitants of whole villages came and settled in our territory, though they still cultivated their own lands in Oudh." I do not wish to lay much stress on these facts; but I will cite one passage* to show the kind of migrations which the history of Native government records.

Colonel Wilks gives the following description of the *Walsah* in the South of India:—

"On the approach of an hostile army the unfortunate inhabitants of India bury underground their most cumbrous effects, and each individual man, woman, and child above six years of age (the infant children being carried by their mothers), with a load of grain proportioned to their strength, issue from their beloved homes and take the direction of a country (if such can be found) exempt from the miseries of war, sometimes of a strong fortress, but more generally of the most unfrequented hills and woods, where they prolong a miserable existence until the departure of the enemy; and if this should be protracted beyond the time for which they have provided food, a large portion necessarily dies of hunger. The people of a district thus deserting their homes are called the '*Walsah*.' It is a proud distinction that the '*Walsah*' never departs on the approach of a British army when unaccompanied by Indian allies."† Such migrations leave no doubt of the character of the government under which they occur.

(4.) But are they worse than the Orissa famine? A separate report by Special Commissioners having been furnished on this subject, it is needless for me to enter upon it at length. But it were an error to suppose that Native Governments ever prevented famines. It is plain that our Government may altogether abstain from interference, and yet that throughout the greater part of the Continent the improvements which have been made in the communications must ordinarily facilitate the transport of grain to the distressed parts. Special local circumstances may exist justifying the interposition of the Government, but generally, wherever roads and carriage are available, the natural action of trade will most quickly and abundantly supply deficiencies.

In the famine in the North-Western Provinces in 1861, grain for the first time was sent down from Umritsur to Delhi. Had the Punjab been under Native government, probably the export would have been prohibited. The people of the Punjab still date from a disastrous famine which occurred there before we annexed the country. Bengal also was virtually under a Native system of administration when the great famine of 1770 A. D. occurred. It is admitted by Colonel Baird Smith that, owing to the accumulation of wealth consequent on the Settlement of 1833 A. D., the population suffered much less in 1861 than in 1837; and without any reference to the case of Orissa, I maintain that the policy of fixing the land revenue favourably for the agricultural classes generally, rather than in the interest of a few great chiefs, is the most effectual way to mitigate the effects of such famines by stimulating the industry of the cultivator, increasing production throughout the Continent so that one part shall be able to supplement another, and creating those habits of forethought, abstinence, and accumulation, which it is in vain to hope for under other circumstances. Thus, too, only can a permanent and increasing surplus revenue be secured for the construction of those works of irrigation which are absolutely necessary to aid the exertions of the people. I say too, that, under a Native government, though at intervals the people may be fairly treated, and public works made, yet there is no *security* for good administration, and a line of imbeciles

* It must be remembered that many of the Oudh cultivators had sinister reasons for living outside the Nabab jurisdiction; and that, although cultivation has largely increased in Oudh since annexation, the districts on the Ganges were previously highly cultivated and populous.

† Wilks' South of India, Vol. 1, page 303.

may succeed to an Akbar. It has been truly said that it is not necessary that a people should govern themselves, but that they should have security for good government. Under Native rule they have none.

Certainly we are bound to promote the happiness of the people. But who are the people, and what their happiness? In the North-Western Provinces, out of a population of 30,000,000, more than 18,000,000 are Soodras, the Brahmins about 3,500,000, the Chuttrees about 3,000,000. The dominant active land-holding classes are thus in a great minority. The Soodras have been immemorially treated as an inferior race of serfs. The only legal protection they have ever received has been from the British Government, with the fall of which it would at once cease. They will for long continue even under us socially depressed. The awakening of a people from the torpor and depression of ages is always, and perhaps beneficially, a slow process. But under us only have large bodies of these lower classes, numerically so predominant, the chance of bettering their condition. As it is, they largely share in the pervading benefits of British rule. Wherever a limit be placed on the rents taken from them, and their tenure be fixed, their prospects are infinitely improved, and they can then appreciate security of person and property, and the facilities for movement common to all classes. The Brahmins and Chuttrees again, though restrained from oppressing the cultivators, enjoy their social superiority, and are very generally in independent possession of proprietary holdings moderately assessed with the Government revenue. It would perhaps be impossible for a Government to do more than has been done for the far greater part of this large population. Are they then happy? Who can reply? But it can be said that no political measures impede their well-being, and this is the affair of a Government. Moreover, it may be added that "their tastes have been suited," for the great mass are agriculturists, whose chief attachment is to their lands and villages, and in these their occupation is secured. Their moral development is certainly backward, but I am not aware that there is any design of casting it in an Anglo-Saxon mould. The only direct agency at work in connection with the Government is the Educational Department. Popular instruction is proceeding at a rapid rate, though its results are not yet conspicuous. But doubtless other influences are also silently in operation. The codification of the law, the multiplication of vernacular newspapers, the facilities for locomotion, the growth of trade, are potent stimulants of the popular mind. Still none is exclusively Anglo-Saxon; they are expressions of the ideas of Europe during the last century, and have already raised at least one nation (that perhaps the least unlike orientals) to a considerable elevation. Can there be a clearer proof of the penetration of Western ideas than the criticisms one hears daily from Natives who cannot speak English? These constantly imply the responsibility of the Government to the people, and would sound revolutionary to many English ears.*

* The following extract from a Native newspaper exemplifies the rude shock sustained by the conservative ideas of the time. It quite represents the sentiments of the Indian Faubourg St. Germain:—

"It is said that in this generation knowledge has become so cheap that one and all, high and low, butchers, shoemakers, tailors, and all of low caste sit in shops reading English books; and late in the evening the budmashes (bad characters) collect together and walk about the city of Lahore, and when they arrive at the houses of dancing women they commence talking obscenity, such filthy language in English, that, may God protect us from it! Those who hear it become quite ashamed. Since such people as these were entertained in the Government Courts, those who had never seen a mat before now dream of bedsteads; and those who once had not a mat to sit down upon, now have chairs given to them; and thus, like the *chinka* the cat pulls down, they have lost their tempers. They claim equal position with the great and respectable, and even look down on them. The respectable are breathless, and have sealed up their lips. It is necessary for people to remember their origin, but these have become so haughty and proud, as even the most wealthy were not in former days, when such as these could not present themselves at the door of a Durbar, but went about with downcast looks in presence of respectable people. Now they purposely strut, or strike out with their feet, walking. It is true that God does not allow any one's arrogance to stand, and now the respectable are suffering for their haughtiness and pride. This cheap knowledge for the lower classes has many disadvantages. The first is, that they are like the beggar who becomes suddenly rich, and who does not lose his beggarly ways. Secondly, everything will become dear when low caste people give up their legitimate professions and become writers, as the respectable classes are not likely to take up the work the lower classes discard; therefore, those who will not do such work will become gradually poor and be beggared; many have already become so. If any gentleman is in want of a Munshi, he can take his choice from a thousand in the city of Lahore, who think Rs. 5 enough, and feel grateful too for it. It is worthy of notice that coolies receive Rs. 8 on the rail, while the respectable classes are in want of daily food; because some of the lower castes are entertained on English and Persian, and when they are discharged they go back to their own professions, as they do not consider it any disgrace to follow their own professions. But the writer by profession cannot do other work, and if he should try to gain his

Surely we may take courage from the transformation of ITALY. It would indeed be rash to predict, it is in my opinion not even wise to wish, that the moral development of the people of India will be confined to an English model. Yet it is quite impossible to read the speeches of Cavour without perceiving how thoroughly his opinions were leavened by the ideas predominant in England since the emancipation of the Roman Catholics. How were the men, capable of receiving these ideas, bred? I believe that no one will dispute that this intellectual regeneration began under the despotism of Napoleon, and without it would never have commenced. The first demands of the revived nationality were for the restoration of the Code Napoleon, and the repair of the roads constructed by the great Emperor. Under its small Native Governments, the Italian moral and political character remained for centuries stationary and pitiable. Its elevation was produced by foreign influence, and the same process is slowly going on in British India.

It may be thought that I servilely adhere to the traditional principles of the British Government in insisting on a popular settlement of the land revenue as the foundation of physical, and consequently of moral and intellectual, progress. But I can hardly express my ideas better than in the words of Sir Charles Napier, who came to India late in life, and with no prepossessions in favour of its government. Speaking of his partial resumption of jagheers, he writes:—"My motives for this step are that a host of poor ryots, hitherto slaves, not only to the Ameers but to the Jagheerdars, will be enfranchised and enabled to live in comfort if industrious; and I know that the nobles can never be good or contented subjects, unless we give them public employment and honour them. When civilization advances they will, under this system, find themselves rich, and they will embark in mercantile pursuits and agricultural improvements, because they will find their property safe, and need not, as heretofore, make themselves formidable as military chiefs to retain it. But had I left them in possession of their enormous jagheers and their military tenures and their royalties, they would have always been dangerous subjects. We have now put them down as military chieftains, and we can keep them down because of their semi-barbarism; but hereafter we should find it very difficult to deal with their more civilized sons, if they continue to hold such immense tracts of land which advancing civilization will change from wastes to fruitful possessions. Even under any system they will become very powerful; but I have established a counter-check by opening a way to raise a race of independent farmers attached to the Government."*

Many persons, whose opinions I respect, consider the policy of which the above is a rude outline condemned by the events following the mutiny in Oudh. It would

livelihood by taking up any other trade, his respectability and the respectability of his ancestors must suffer; such men as these are driven to hardships and beggary for their food. Thirdly, it is disrespectful for the lower ranks (or low castes) to sit in presence of those above them (the *sahab loques* for instance). All who are read in the English language cannot do without chairs and tables, nor can they do work of the sirkars; and fourthly, the respectable have, for their own purposes, to bow down to the low; and because the low are puffed up with their own pride, nothing can be gained from them, and the honour of the respectable suffers by this."

* The following lately appeared in the *Som Prokash*, Vernacular newspaper, and is a fair reflection of popular feeling:—

"The land has been repeatedly invaded by conquerors and disturbed by internal commotion. The powers of India have repeatedly been ruined, and the crops destroyed from the time of Mahmood of Ghaznee up to the time of the Mahratta Chief, Shibdás Ráo and Pindaree Ahmed Khan; but in a few years they resumed their former appearance. And why? Because of the nature of the land settlement. The agriculturists have, generation after generation, cultivated the same land, and they have become as attached to it as if it was their own, and, therefore, in spite of all difficulty, have again and again put forth their endeavours and clad their fields with green. Our cultivators are by no means wealthy, yet they are not in want of food, nor are they discontented with the old ploughs and the ancient modes of cultivation. They care but little what changes take place in the Government, so long as cultivation is not too much interfered with; if it is, they become discontented. Practically they are the possessors of the soil. In former times Mahomedan rulers used to resume talooks and jagheers; but, this species of oppression was felt only by the zemindars. The land changed hands, but the tenants' rights were not affected. This plan being in use in the Native States, the cultivators there are better off than in British territory. No zemindar wishes to oust a ryot from the land of his father, and of course when necessity requires it, the latter is even ready to procure more than his rent to assist the zemindar. Amongst all the rules of the British Government referring to land, none are more desirable than the permanent settlement system. But even in that there is a flaw, viz., the cultivator's right is not determined. The zemindars are always endeavouring to establish in Court their own right to enhance the rents, but the tenants do not consent to this. They are ready to give the zemindar quietly whatever else he may be in want of beyond his share of rent, but they are not ready to assent publicly to the zemindar's right to increase their rent. It is these disputes which prevent the advance of agriculture, and where they are common, the people are very poor. The system, on which the British Government work, is such that if there was no flaw in the land settlement, not only would the agriculturists be comfortable, but the land itself would be in a far better condition. Therefore, it is but right to endeavour to execute a permanent settlement with the tillers of the soil direct."

be too long a digression to enter into this argument at length. Suffice it to say that there is no proof whatever or reasonable presumption that the Talookdars, if they had been settled with at annexation, would have adhered to the British side. My individual opinion is that they would have behaved exactly as they did.

Many acted under the impulse of individual character; but it is generally understood that Maharajah Maun Singh, to whose example the majority looked, while not accepting the bribes we offered him in the shape of promised jagheers, took no part against us, until Havelock retired after vainly attempting to advance from the Ganges to Lucknow. Maun Singh considered that our rule was over; and I am persuaded that he would have come to the same conclusion had his talooka been left with him.* I am much confirmed in this opinion by the conduct of the Talookdars whose estates lay across the Gogra, all of whom were settled with. Nevertheless, they were amongst the most obstinate rebels, and several suffered the confiscation of their estates rather than avail themselves of the Queen's Amnesty. In such circumstances men are swept away by the current of events. Witness Sirdar Chutter Singh and Shere Singh in the Punjab rebellion; witness again the Belooch Chief who opposed the return of the Ameers to Sind on the ground that if they rebelled, he must join them and forfeit the lands he gladly held of us. The prolongation of an anarchy in Oudh during 1858-59 was not owing to popular rebellion.† It is not for me to presume to express an opinion on the military operations of that time. But had columns been available for movement after the capture of Lucknow, the information since obtained, though not then forthcoming, shows that order might have been restored much earlier. The inaction of the village zemindars whom we had favoured was not because they did not wish to have the settlement of their villages. It is to be explained by the want of combination amongst themselves, by the very good reason they had to consider our Government at an end, by their clannish sympathies with their chiefs and the sepoys, by the delay of our military movements, by the exposure of the lives of individuals who gave intelligence to us. After all, they were in rare instances actively hostile. As a nation, they were not opposed to us, and though I contend that agrarian measures may keep them neutral, I do not say that, in difficult circumstances, they will certainly enlist their aid. I submit, however, that the neutrality of the masses is the corner stone of our supremacy. It is for some reasons far more important to us than to a Native Government to place the agricultural population in comfortable circumstances. In a state of never-ending war and confusion there is not the steady increase of population which follows on the restoration and fixed maintenance of peace and order. The inferior soils come under cultivation; the yield is smaller in proportion to the labor; the rude plenty of less crowded times recedes; an uneasy sense is felt of an intenser struggle more scantily rewarded. This, I am told by observant Natives, is the spreading sentiment among the rural classes. The complaint is that there is no *burkut* under the British Government. It may be remembered that Colonel Sleeman mentions exactly the same grievance being adduced by the Jats of the Delhi territory.‡ The meaning is that the toil is greater, nature more niggardly, the battle of life harder. The agrarian mind attributes the change to the foreign rule, to the remittance of money to England, to the decay of Native manufactures, to anything in short which runs counter to its prejudices. But here we have in reality the eternal problem which meets all peaceful governments, native or foreign. We may place a population in a position to receive the fair reward of its labour. But we cannot alter physical laws, nor can these be violated with impunity. [Still the primary conditions of the growth of moral and reflective checks on the increase of population must be the possibility of saving the fear of falling lower.] With these there is always hope of amelioration. Yet adverse circumstances may intervene, and it is no doubt possible that, in spite of the most liberal provision, a population may multiply so as to remain ill-fed, ill-dressed, brutal,

(*Sic orig.*)

* It must be remembered that the settlement of 1856 did not finally settle rights in land, and that it was open to Talookdars, excluded from settlement, to prove their titles if they could at the regular settlement. I make no excuse for the order depriving them of the customary *Nankar*, or subsistence allowance.

† In a Minute recently published, Sir W. Mansfield remarks that "the East India Railway Company in 1857-58 pushed on its railway notwithstanding the war, and actually obtained great masses of labour from districts still in open revolt." The truth is, the industrial orders had no quarrel with us. When Koer Sing in 1858 was turned out of Azimgurh, which he had possession of for about three weeks, I, as Magistrate, rode through the town and was vehemently scolded by an old woman for managing so badly as to allow the rebels to retain it so long. I was quite as ready to find fault with the townspeople for not having aided us more actively. But we all agreed that the rebels were the common enemy.

‡ *Vide* Rambles of an Indian Official.

and ignorant. Wherefore it is much more incumbent on us than on any Native rulers to diffuse popular instruction as widely as possible. It is in my judgment not merely an illiberal but a most imprudent act to restrict education to the superior circles of society. But here again I find that in the North-Western Provinces and the Punjab at least, the same policy which has provided for the material wants of the existing population has also provided for their mental enlightenment. To do one without the other is not enough.

It should be well understood, therefore, what the establishment of a congeries of Native States means. It implies that the masses are to be dependent for the improvement of their condition in all respects on the accidental character of the ruler for the time being. It implies the cessation of a policy which, with whatever degree of success, aims from generation to generation at their improvement. It implies the erection of constant impediments to measures affecting large areas in India. It implies the withdrawal of great revenues from the funds, both State and borrowed, available for all public works affecting such areas. It implies, as a rule, the obstruction of canals, not the prevention of famines; the uninstructed supineness, not the intelligent contentment of the mass of the people; the paralysis, not the amelioration of the British Government. This is not to say that this immense country cannot at some distant time be advantageously governed by men native to this soil, but that there are not yet within it the conditions necessary to any sort of self-government. It is not to say that the population will never be fit to choose wisely their own rulers, but that circumstances have hitherto been and continue such as to render them incapable of forming a true national judgment. It is not to say that the British Government is without defects, but that it has a merit, one never certain or enduring in a Native dynasty, that of gradually training its subjects so that they may, in the fullness of time, become competent as a people to decide their own destinies and govern themselves.

One growing grievance does call for redress. Deposed Princes and their servants have claims only on our sympathies and indulgence, and we cannot expect, however liberally we may deal with them, to make them forget their former state, or to aid the revolution from which they have suffered. They will not, they cannot, take an efficient part in the new polity. But there are considerable classes, both Hindoo and Mahomedan, of hereditary distinction and noble aspirations who break with the recollections of the past, and throw in their lot with the reformed constitution of the Empire.

Many of them can bring convincing testimonials from their foreign superiors to prove their conduct and capacity as soldiers or civilians. Frequently, while still in early manhood, they have attained to the highest grades open to Natives. It appears to me highly impolitic, and, if only administratively, unwise not to allow of the promotion of such excellent servants of the State by a process of careful selection. It is unnecessary to enter into any details. But these are the firstfruits of a system which, identifying the Government with the true improvement of the whole people committed to its charge, educates the flower of the subject race in the science of administration as practically developed in the light of the accumulated knowledge of Europe, and it is our bounden duty, as well as our proper prudence, to provide escape for their growth to maturity. Thus blending with our work the minds we have moulded, fairly rewarding the efforts we have evoked, ever mindful of the tacit defensive alliance between ourselves and the masses, not faithlessly deserting or ignorantly depreciating the civilization which we wish gradually to transfuse, or panic-stricken by dangers over-passed, we may still confidently hope with due patience and perseverance to acquit ourselves of our stewardship to the future satisfaction of India, the glory of England, and the applause of history.

From Captain R. A. COLE, Superintendent of Coorg, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department, Simla.
—(Dated Fraserpett, 18th July 1867.)

IN reply to your confidential letter of the 1st instant, I have the honour to submit, for the information of His Excellency the Viceroy and Governor-General of India, the following particulars on the subject as to whether the system of our administration in India possessed, in the estimation of the Natives, any superiority over the method of government pursued in the independent States, as far as I can vouch for from personal knowledge.

2. I may premise my remarks by observing that my knowledge of the feelings, wishes, and ideas of the people only extends to the Provinces of Mysore and Coorg, in which alone I have had the honour of serving under the Civil administration of His Excellency.

3. As I have at present the honour of holding the charge of this province, I would beg to submit the particulars regarding Coorg first, and then pass on to a consideration of the feelings on the subject of the people of Mysore.

4. The former rajahs of Coorg, as His Excellency is aware, were Lingayet Brahmins, aliens and strangers, who had never obtained the confidence or affection of the Coorgs themselves. Some centuries back, before the Lingayet dynasty had been established, the province was in the hands of petty Polygars or chiefs of *nàds* or subdivisions in Coorg; but all trace of these Polygars was stamped out by the rajahs, and the present chiefs or headmen derive their influence and position from having risen to high posts as dewans, &c., under the rajahs. I might here state that my present Head Sheristadar commanded the Coorgs at the Buck Stockade, when we were repulsed during our advance on Coorg.

5. The lives, property, and women of the Coorgs were, however, never safe for a day, and the atrocities of the last Rajah of Coorg, notwithstanding the late pamphlet of Mr. Montgomery Martin, are well known to the Government.

My Head Sheristadar and other old officials have declared that they had been often flogged before the Rajah for little or no offence at all.

6. As regards the Coorgs, I have no hesitation in declaring that they are, without any exception, far more prosperous and happy under our rule than under their Native rulers.

I am led to this opinion, not from the sayings of subservient officials, but from an intimate knowledge of the feelings of the people themselves. I have always been in the habit of riding about the country away from officials, and without even a peon following me, on purpose to have unrestricted conversation with the people themselves, and I can vouch for the statements herein made.

This opinion is also borne out by the fact that the Princes of Coorg, now residing at Benares, lately deputed emissaries, *Coorgs* who had followed them to this province on purpose to obtain Coorg brides for them, but not a single family would consent to the honour of the alliance.

7. I may here state, with reference to this significant attempt to re-awaken an interest among the people of this province, that the few Coorgs who accompanied the late Rajah's family, had become connected by marriage with the several members.

8. Passing on to the people of Mysore, there is no doubt that Native States offer superior attractions to certain classes.

The causes for this are so clearly given in paragraph 2 of your letter under reply, that I need not allude to them; but I would beg to maintain that those classes bear an infinitesimal proportion to the great masses of the people, especially to the mercantile and agricultural communities. Ever since the agitation of "the Mysore question," I have carefully endeavoured to gauge the feelings of the people.

Traders, sowcars, and others have openly declared that, under our rule, they could amass money without any dread of spoliation, and that under Native rule, their lives even, much less their property, were not safe for a day.

9. I am convinced that, with the exception of the Brahmins and people about His Highness's Court at Mysore, and the lower classes under their immediate influence, the great mass of the people consider themselves far safer and happier under our rule.

From my own personal experience amongst the Ryots, I can safely declare that they have not forgotten the great oppression of the Native local rulers which led to the rebellion in Mysore and to our assumption of the Government, and that they thoroughly appreciate the justice and blessings of our rule, which has led to their becoming independent of even the local money-lender, and to being the most prosperous agricultural community perhaps in all India.

From Captain R. A. COLE, Superintendent of Coorg, to the UNDER-SECRETARY to the GOVERNMENT of INDIA, Foreign Department, Simla.—(Dated Fraserpett, August 8, 1867.)

IN continuation of my reply, under date the 18th ultimo, to your confidential letter of the 1st July 1867, I have the honour to submit, for the information of His Excellency the Viceroy and Governor-General of India, the following report of certain details which have since transpired.

2. In my previous letter I alluded to the attempts made by the Princes of Coorg, now at Benares, to obtain Coorg brides.

This attempt led to Biddundra Somia, a Kárikar or commandant of a regiment under the late Rajah, going to Benares a few months ago to ascertain whether any of the Princes were going to marry a daughter born to him during his exile with the Rajah, and who had been left behind with the family. I may here state that a sister of Somiah had become one of the wives of the late Rajah, and been admitted into the Lingáyet persuasion.

3. This Somiah and three other old Coorgs have lately returned, and Somiah has brought his daughter back with him, in consequence (I am privately informed) of the Princes not being willing to marry a girl who is suspected to have had intercourse with their late father.

4. Biddundra Somiah informed me that the Princes desired him to try and get the Coorgs to send in a petition, praying that the province might be restored to their dynasty! On my questioning him and the other Coorgs, the significant reply was that such a request would lead to the same result, as nourishing a serpent in their bosom! They also stated that they had declined to do so, and that the Princes had then asked them not to oppose their return to reside in Coorg, in event of their petitioning the Government to allow them.

5. With regard to my remarks that the great mass of the agricultural and mercantile communities are more prosperous and happy under our rule, I am convinced of the fact; but in the several villages and towns scattered through the Province of Mysore, are to be found the “clever and the bold, and the ambitious,” as pointed out by you, who have acquired a certain local influence, and whom many of those communities might follow like a flock of sheep would their shepherd; but the people themselves individually are far happier and more prosperous under our rule.

6. I believe also that most of the official classes prefer our rule to the chances and caprices of Court favour, especially since they have been put on such a good footing as regards position and emoluments. Of course, among these are some “clever, bold, and ambitious” men, who might prefer the non-restrained exercise of power under a Native Court.

7. In conclusion, I would venture to hope that I may be excused for again addressing you on the subject, as I have done so merely with the view of affording His Excellency all the information in my power on such an important subject, as I should be loath to believe that our interference and predominance in India have not led to more contentment and prosperity among the respectable masses of the people.

From Lieut.-Col. HENRY HOPKINSON, Agent to the Govr.-Genl., N.E. Frontier, and Commr. of Assam, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department, Simla.—(Dated Gowhatty, July 19th, 1867.)

I HAVE the honour to acknowledge the receipt of your letter of the 1st July 1867, requesting me, with reference to Lord Cranborne's speech on the recent debate on the Mysore question, to furnish you with any statements showing the condition of the masses of the people respectively in British territory and under Native rulers, which it may be within the limits of my experience to supply.

2. I assume that my experience is to be understood to be limited to Assam.

3. There are no Native States adjoining Assam between the population of which and the population of Assam any useful comparison could be drawn in respect to the amount of prosperity and happiness which either enjoyed. It would be useless to make such a comparison between the Assamese and any of the hill tribes, as Booteas or Nagas, or Cossyahs, since the difference of the physical conditions under which they live must exercise a more potent influence over their social condition than their form of government.

4. But may the state of Assam under British administration and what it was under its Native rulers be compared? Well, it is not so easy to find reliable data for such a comparison.

5. When the British came to Assam it was to relieve the Assamese of the cruel and intolerable yoke of the Burmese, and no doubt the Assamese are far happier and more prosperous under our administration than they were with the Burmese for their rulers; but this proves nothing for or against Lord Cranborne's argument. On the other hand, there are no statistical records extant to show what the condition of the people was before they began to be distracted by the fierce, incessant feuds which ended in the Burmese being called in; but tradition ascribes to that period a numerous and happy population, and a character for plenty and prosperity, and there is indeed evidence to show that the people were in many ways more capable and intelligent in those days than they are now.

6. Referring to your opening paragraph, will you pardon me for observing that it seems to me that you rather force Lord Cranborne's meaning in saying that his Lordship took occasion to doubt whether the system of British administration in India possessed, in the estimation of the Natives, any superiority over the method of government pursued in the independent States. Lord Cranborne did not say *that*. If I may trust the abstract of his speech given in the *Overland Mail*, he remarked that "he was not of course for a moment *denying* that our mission in India was to produce order, to civilize, and to develop a system of Native government; but he certainly demurred to the *wholesale* condemnation of that Native system which, though it would be perfectly intolerable on our own soil, having grown up among the people subjected to it, had a fitness and geniality which we indeed could not realise, but which compensated in some degree for the material evils which its rudeness often induced." It seems to me that this way of putting the case is moderate and quite within the truth, and the remainder of the speech is all in the same key.

7. It would be presumptuous were I to pronounce upon the character of British administration in India generally; but I confess that "a heedlessness," not indeed listless and heavy, for it is active enough, perhaps too active, but doctrinary and wanting in discrimination and sympathy, "the fear of responsibility" (let me add, the intense jealousy of allowing responsibility), and "extreme centralisation," are faults which I would attribute, indeed, which in my notes on Major Lee's Memorandum that I lately submitted to the Bengal Government, and of which a copy has been doubtless furnished to the Government of India, I have attributed to the system according to which Assam is now ruled.

8. Let me also refer to the description given by the Famine Commissioners, at paragraph 409 of their Report, of the Bengal system of administration, that the executive reigns, but does not govern, and point out that while other provinces, less backward than Assam, less needing a strong executive, and less different from Bengal, are more actively governed, we in Assam get the Bengal system for no better reason than that we have been annexed to Bengal; in other words, the bureaucratic disregard of differences of circumstances, and the jealous centralisation which Lord Cranborne condemns, insist that we shall follow altogether in the Bengal groove.

9. Were I to infer the position of our Government in India from that in which it appears to me it stands in relation to Assam, I should apprehend a prospect before it of extraordinary difficulty. For in Assam I see a public expenditure, which would speedily bankrupt the province if it had to depend upon its own resources, lavished upon establishments, civil and military, beyond the necessities of Assam, and in its present social development tending, I think, rather to the disintegration than to the consolidation of authority.

10. There are surely some grounds for Lord Cranborne's remark that the Report on the Orissa Famine would furnish a terrible example of our elaborate and artificial English rule; nor do I wonder at his noticing the point which the system of extreme centralization has been allowed to reach. Its genius especially lies in that daring application of general principles without regard to local circumstances to which the Famine Commissioners have drawn attention, and of which the fiscal administration of India since the mutiny has furnished several instances. One may understand how various nationalities should be submitted to the operation of the same Penal Code; but I believe it is admitted that any scheme of taxation to be successful must be nicely adjusted to the nature of the resources, the state of civilisation, the habits and customs—nay, even the prejudices of the people who have to bear it, and yet

we see the self-same Income Tax (borrowed from England), Stamp Act, or License Tax, put in almost universal operation among nations in every diversity of condition and in every variety of surrounding circumstances under which mankind are found living.

11. In deciding between the respective merits of Native and British systems of administration, this much at least must be conceded, that the British administrations which have received most credit for efficiency are precisely those which have approached closest to the "rough and ready method of Native government;" while on the other hand the administration which at this moment is perhaps the least favourably regarded in India, is that which is the furthest removed from the Native type. This is a very strong argument in favour of Lord Cranborne's view.

12. On the other hand, if extreme centralization and the fear of responsibility have attained the dangerous proportions which Lord Cranborne imputes to them in the English system, it might be worth while to inquire to what extent the Indian Government are answerable for this state of affairs, and whether it has not been forced upon them by the relation in which they stand to the Secretary of State for India, and again in the relation in which that high officer stands to the Imperial Parliament. For everything done in India an account has to be given, or may have to be given, to the Imperial Parliament; and the more negative, therefore, the character of the Indian Government, the more perfectly they can substitute, for the irregular action which attends individual exertion and development, a system of machinery deriving all its motive power from themselves, and working with a quietness and smoothness the least calculated to attract attention, the more rare will be the calls for explanation, and the easier it will be to furnish it when called for.

13. Lastly, I would observe that if endeavours are ever made to develope the moral nature of the Natives after the fashion of the Anglo-Saxon race, it will be found that for the most part they originate either in England or with Englishmen out of the official pale in India.

From L. R. ASHBURNER, Esq., Magistrate of Kandeish, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.
—(Dated July 21, 1867.)

ALTHOUGH the more intelligent class of Natives admit and appreciate the greater security of life and property and the more generally prosperous condition of the masses in British territory, I am inclined to believe that Lord Cranborne has correctly estimated the general tendency of public opinion on the relative merits of British and Native administrations.

2. The bulk of the people are so ignorant of everything that passes beyond their own immediate point of view, that they do not know what a Native State is. It is associated in their minds with a system of rough but swift justice to all, and a government conducted with a great deal of pomp and display. What may be called the oral literature of the people, the ballads, traditions, and dramatic representations of their Bhats and Bowayas, all tend to keep alive this idea. No one who has observed the unwearied patience and interest with which a village will listen to their recitations for a whole night, can fail to understand the powerful influence they must have on public opinion; and when to this is added the feeling of nationality and the common tendency to exaggerate the benefits of the past, it is easy to understand how inferior our system of interminable delays and preference of law to justice must appear compared to the popular ideal of a Native State.

3. On the frontier of an ill-governed Native State, where the people are brought in more immediate contact with oppression and misgovernment, our system may have its advocates; but even there, for every instance of insecurity of life and property, the Patels will quote equally distressing cases of respectable families impoverished and ruined by the action of our Civil Courts, or of notorious murderers let loose upon society owing to some legal quibble. Not understanding the stringency of our rules of evidence, they attribute these failures of justice, which are every day becoming more common, to the corruption of the Judges.

4. Notwithstanding the many faults of our system, the most prejudiced observer will admit that, though the upper classes—the aristocracy of the country—are impoverished, the great body of the people are better off than in any of the neighbouring Native States, and it might be argued that this fact *must* turn the scale of popular

opinion in our favour; but the fact is, as I have stated, the great bulk of the people know nothing of what is going on beyond the limits of their own village. It would appear incredible that the people of Oudh, after their terrible experience of a Native government, should prefer it to the vigorous non-regulation rule they enjoyed after annexation; but it is well known that the population of Oudh not merely acquiesced in the rebellion, but became active partisans of their late Chiefs.

From Lieut.-Col. T. CLERK, Inam Commissioner, Mysore, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.— (Dated July 22, 1867).

IN reply to your confidential communication of the 1st instant, I have the honour to submit the following observations.

The Government established by us in Mysore when we assumed charge of the country was peculiar; it was neither wholly British nor Native, but a combination of the two,—the old Native institutions were worked by Native agency under European supervision. The result of this experiment, fostered and guided by the wisdom of Sir Mark Cubbon, was a marked and rapid improvement in the condition of the country, which has increased under the sagacious rule of the gentleman on whose shoulders Sir Mark's mantle has so fortunately fallen, until Mysore at the present time exhibits a degree of prosperity that no person would have ventured to predict in 1831.

But with all this, I am bound to state that the people generally believe, however erroneous that belief may in my opinion be, that they would be happier under a Native ruler; and this feeling, as far as I have been able to judge, is of comparatively recent growth, and the main causes are briefly as follow.

The judicial system now being introduced into Mysore is too refined and complicated for the people,—rude, simple, and uneducated as they mostly are, and the niceties and technicalities of our Courts perplex and harass them. I am speaking of course of the bulk of the people in the districts. Bangalore itself, with its large mixed population, now that it is connected with Madras by rail, and barristers and pleaders can and do run up to conduct cases before the Courts, and also considering the superior wealth, intelligence, and education of its inhabitants, is probably ripe for the reception of the law as administered in Her Majesty's Courts. But the mass of the people sighs for a return to their old forms and institutions, which with some slight modifications were, and I believe still are, admirably adapted to their requirements.

The system of the Public Works Department, again, causes much discontent and grumbling amongst the people. They see grand old works around them constructed chiefly by Native rulers, and they do not of course stop to enquire by what means they were constructed. There they are, and they profit by them. On the other hand, they now see an expensive establishment scattered over the country, and little or nothing done by it, save the construction of jails and public buildings. Where, they ask, are the works performed for our benefit by the Department of Public Works? And the question, I must confess, is a difficult one to answer. Here, again, the people long for the "good old times," and the desire is not unnatural, though they forget the past misery of forced and unrequited labour.

The vexatious restrictions and interference of the Forest Department, too, are a fertile source of discontent. These and some other minor matters are, I think, the causes which lead the mass of the people to suppose that Native rule would be preferable to European. The educated and higher classes of course have other reasons for desiring a change.

That Mysore was in a most deplorable state when the British Government assumed government of the country, and that it has prospered in a remarkable degree under our supervision, nobody but a mad man would attempt to deny. But it must not be forgotten that all this prosperity was principally achieved by Sir Mark Cubbon with Native agency, assisted by a very few Europeans. The people then, I think, were generally contented, at least they did not evince discontent further than to give vent to the occasional expression of a wish (whether sincere or not I can't say) that the raj should be restored to a Native ruler. Since Sir Mark Cubbon's resignation, however, and the introduction of changes in the administration affecting the old established Native institutions, expressions of discontent have become more general. Formerly, a Native having a grievance went at once to the Superintendent;

if it was not redressed by him, he went to the Commissioner;⁷ but now the administration is divided and sub-divided into such a multitude of separate departments, that the Natives are fairly bewildered; and although I, as an Englishman, maintain the undoubted superiority of British to Native rule, I am not in the least surprised that the Mysoreans should desire to see a Native ruler on the throne, and Native institutions once more take the place of our more elaborate system of government.

Having lately been honoured with the appointment of Inam Commissioner in Mysore, I have no records at hand from which I could draw any statistical information; but I beg leave to refer you to a memorandum drawn up by Sir Mark Cubbon, and submitted to the Marquis of Dalhousie at the latter end of the year 1855, from which will be seen at a glance the enormous advantages that have accrued to the Mysore country from our administration. The reports of Mr. Bowring will show what has been accomplished since that date. It is, however, too true, as remarked in your letter under reply, that the contemplation of present inconvenience renders people oblivious of past misery, and this is notably the case in Mysore. But, as I have previously observed, there are some slight grounds, in my opinion, for the murmurings of the Mysoreans. Our strict sense of justice and honesty of purpose is never questioned by the people. But, at the same time, I believe that they look upon us as exacting and unsympathizing masters.

I am in doubt whether I have rightly apprehended the nature of the report required by His Excellency the Viceroy, and if I have made any mistake in this respect, I trust that I may be pardoned. I have been over 24 years in the Mysore Commission, and have served in every part of the country, and have not been altogether unobservant of the signs of the times.

From GORDON FORBES, Esq., Madras C.S., to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.—(Dated July 31, 1867.)

YOUR circular asking for statistics calculated to show the substantial benefits enjoyed by the people under British rule, in contrast with their former condition, only reached me this morning, having been sent to Ganjam. I am only able to suggest a few of the sources from which a refutation of Lord Cranborne's remarks might be drawn. Among the pictures of a former state of administration which are to be found on the public records, it may be useful especially to look into Sir Mark Cubbon's report on Moturpha taxation in *Mysore*. See also Mr. C. P. Brown's translation of a Teloo-goo book called "the Wars of the Rajahs."

It will no doubt have occurred to you to have selections made from articles on British rule in the Native Press, and our Codes will be instanced in evidence of the principles on which we have legislated. The number of titles in fee simple issued by the Inam Commissioner in this Presidency, the reduction of the assessment on the land, and the moderate incidence of the reduced rates, as compared with the proportion drawn by Native landholders from their tenantry, the consequent enhancement of land in the market, the increased and increasing area under cultivation, and the vast quantities of raw produce yearly exported, the bullion which flows into the country in return, all these are probably on your list already as evidence of the soundness of our land revenue administration. A return of the number of wheeled carriages which the construction of district roads has brought into existence during the last 20 years will speak for itself, and a progressive return of the number of candidates who have presented themselves at the test examinations will also be effective.

I will endeavour to procure for you the particulars regarding land tax, and area and wheeled carriages for the Madras Presidency; the rest are, I think, to be had in Calcutta.

I have omitted to name the exertions of the Supreme Government to put an end to human sacrifices and female infanticide in the Khond country.

From GORDON FORBES, Esq., Madras C.S., to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.—(Dated October 3, 1867.)

I AM sorry to be obliged to send you so poor an instalment of the information I offered to procure for you. It will be quite fair, however, to apply the principle *ex-uno, &c.*, for the improvement has been general. I see that, in one of the late

Indian debates, Laing spoke in very decided and warm terms of the extraordinary progress since the mutiny, and the *Times* coolly accounts for it all by cotton.

I hope to send you other replies shortly.

MEMORANDUM showing the Increase in the Value of Land to Purchasers, the Incidence of Land Tax in Government Villages, as compared with those in Zemindaries, and the Increase in the Number of Wheeled-Carriages during the last 20 Years in the five under-mentioned Districts.

Districts.	The Increase in the Value of Land to Purchasers during the last 20 Years.	The Incidence of Land Tax in Government Villages as compared with those in Zemindaries.	The Increase in the Number of Wheel-Carriages during last 20 Years.
1 Ganjam -	The increase is 50 per cent.--	The land tax in Government villages takes about one-third of the gross produce at the present high rates for grain. The zemindars or their renters take one-half of the crop, except in sugarcane, tobacco, and cotton. For the first two they charge from Rs. 10 to 15 an acre, for cotton Rs. 5 an acre.	Twenty years ago there were 6,000 carts in the district; there are now 32,000.
2 Godavery -	The lands in this district are of three descriptions, viz., Government Zerayati, Inam, and Zemindary or Proprietary. This district was, till very lately under joint renting system. The shists of Zerayti individual holdings were not fixed by Government, only the lump sum on each village. The ryots were at liberty to assess their individual holdings at their pleasure. There has therefore been no practice of selling Zerayati lands till lately. During the last three or four years, i.e., after the Zerayati lands have been demarcated, surveyed, and permanently assessed by the Settlement Departments, such lands are readily sold. The best Government lands which are assessed at Rs. 3 or 4 an acre are sold at Rs. 50 to Rs. 100 an acre on the condition of the purchaser paying the annual assessment to Government. Lands of inferior quality assessed at Rs. 2 and under are sold at Rs. 10 to 25 an acre. From the year 1860 Inam lands having been enfranchised by the Inam Commissioner and title deeds issued, the best Inam lands which are classified by the Settlement Department as worth Rs. 3 or 4 an acre are now rented out at about Rs. 10 an acre. Such lands are sold at about Rs. 200 an acre, on the condition of paying to Government the quit-rent on it. Inams of inferior quality are likewise sold at about 20 times the annual rent value.	The land tax in Government villages is according to the new survey and settlement rates, which were introduced in 1866-67. The dry rates of assessment vary between 8 annas and Rs. 4 an acre with reference to the various qualities of soil. The lands of similar description and qualities in the adjacent zemindary villages are rented out for double or treble the above rates.	There are very few wheeled carriages. There has been a small increase owing to the facilities of local roads lately afforded by their being constructed from local funds.
3 South Arcot -	The present value of land may be computed at three times what it was 20 years ago.	There are no zemindaries in this district.	The increase in wheeled-carriages may be estimated at ten-fold what it was 20 years ago.
4 Trichinopoly -	The value of land has trebled in the last 20 years.	The ryots in the zemindary villages are paying from 25 per cent. more to double and even treble the reduced rates in the Government villages.	It is considered probable that the increase may amount to a third.
5 Coimbatore -	The value of land is five times more now than it was 20 years ago; but in the case of orchard lands consisting of cocoa and areca nut topes, irrigated by river channels, and wet lands yielding two crops of paddy or superior products, such as sugarcane, betel, plantains, &c., the increased value is much greater.	The rates of assessment are much the same in the Government and Poliput villages so far as dry lands are concerned. In regard to gardens, these lands have been in Government villages charged with the first class Punjab assessment of the village and transferred to the head "dry," while in the Poliput villages the original garden rates still obtain. The rates of assessment on wet lands in Government villages are in many cases much higher than those in the Poliput villages. This is due to the fact that in the former the sources of irrigation are superior, and consequently valuable products are raised on the land, which is not the case in the latter.	The number of wheeled-carriages in 1846-47 was 603, and as now existing, it may be taken at about 4,500.

MEMORANDUM showing the Number of Candidates passed Special Tests during the last Four Years.

Nature of Tests.				1863.	1864.	1865.	1866.
I A.	Judicial Civil, higher grade	-	-	74	101	98	57
I B.	" " lower "	-	-	10	71	128	36
II A.	" Criminal, higher grade	-	-	—	8	252	109
II B.	" " lower "	-	-	58	76	270	201
III A.	Revenue General, higher "	-	-	—	8	36	44
III B.	" " lower "	-	-	58	76	115	182
IV.	" Salt	-	-	—	9	13	7
V.	" Sea Customs	-	-	—	6	11	3
VI.	" Account Test	-	-	—	7	8	3
VII A.	Translation, higher grade	-	-	7	29	65	—
VII B.	" " lower "	-	-	—	—	75	176
VIII A.	Precis Writing, higher grade	-	-	—	—	18	119
VIII B.	" " lower "	-	-	—	—	7	143

From WILLIAM FORD, Esq., C.S.I., Commissioner and Superintendent, Mooltan Division, to the SECRETARY TO THE GOVERNMENT OF INDIA, for Foreign Department.—(No. 195, dated 9th August 1867.)

I HAVE the honour, in reply to the confidential circular which is marginally quoted,
 Dated 1st July 1867 to forward a report on the subjects which have attracted the attention of Government in connection with the recent speech of Lord Cranborne on the affairs of Mysore.

MEMORANDUM drawn up by WILLIAM FORD, Esq., C.S.I., Commissioner and Superintendent, Mooltan Division, and Agent to the Lieutenant-Governor for the Affairs of Bhawalpore.

To decide upon the relative happiness and prosperity of the subjects of British territory in India and of the subjects of independent States, is a very difficult task; but it can be conclusively shown that a great deal of the happiness and the prosperity enjoyed by the subjects of independent States is traceable to British Imperial supremacy, without which the administration of many States could not be carried on.

2. The terms of treaty and of amicable relations between the British Government and Native States give many the moral support of our vast power both as against external foes and internal disorder. At many of the Courts of Native Princes of India, British European Officers are at present able and willing to give most valuable advice on pressing administrative questions, and when the subjects of a Native State are manifestly misgoverned, their conciliatory bearing is most valuable, thus checking oppression and wrong.

3. Again, it must be fully remembered that one of the main springs of the happiness of Hindoo families has been opened out as it were by the firmness and

* Abolished by Lord Bentinck.

which a wife or wives of

† Bernier—Vol. II., page 18, Appendix No. 1.

which he saw at Lahore.†

4. Another point must be recollected in discussing the relative happiness of

For persecution of Christians by Mogul Court, see Bernier, Vol. 1, page 198, Appendix No. 2.

British and Native independent State subjects. The Natives of India are, as regards their religious opinions, divided into the main branches of Mahomedans and Hindoos. Now, in British territory, absolute neutrality and toleration on the part of the State is strictly enforced as a vital principle of Government. It is laid down that the religious belief of any one shall not prejudice him in any way; but in a Native State it is far otherwise; if the dominant power be Hindoo, Mahomedans are ground down and oppressed; no call to prayer is allowed. If Mahomedans form the ruling body, Hindoos are still more glaringly molested, so as to give a sense of

Antiquity of customs for consideration of ox.—Cunningham, pages 335 and 336. Appendix No. 3.

social inferiority to the Hindoo community at large. Too often a cow, even when private property, an object of so much religious veneration when ill, is at once pounced on by Mahomedan butchers and killed for beef. Consequently, on the score of religion,

a Hindoo is far happier in British than in independent territory if his ruler be a Mahomedan. And in British territory a Mahomedan is never restricted as to his call to prayer, which is not allowed in many Hindoo States.

5. But we must not for a moment lose sight of the close connection there is between the British Imperial power and its subordinate independent Native States. Before the events of 1857, many Native States affected an equality with our Government as administered by the Honourable the East India Company, for instance, Gwalior; this led to the campaign in which Lord Ellenborough took a part. But since the events of 1857, I understand the position of England to be Imperial throughout India. Conquest has swept away the last traces of Imperial Delhi and its Mogul dynasty, and the feeling of subordination is not now for a moment questioned, whatever it may have been prior to 1857. The solidity of our Government is most anxiously watched, and we exert a power and authority for good which is fully felt, although perhaps not openly acknowledged, in every hut through the length and breadth of the land, from the sea-shore washed by the ocean wave to the glacier surrounded with perpetual snow.

6. I acknowledge that much suffering may for years exist in a Native State; but I see that, with a strong Imperial Government to eventually refer to, a state of order and amelioration is finally inevitable.

7. But some are prepared to argue that the Mogul dynasty, which we, as an Imperial power, have supplanted, was better suited to the people of India than we are; and that, had it continued, the people would have been happier and more prosperous under some go so far as to assert that the Natives of India were, generally speaking, better off under the Mogul dynasty than under British rule, for the assertion of the superior happiness and prosperity of Native State subjects, as compared with British Native State subjects, is only a covert attack on our Imperial Power.

Revenue and limits of Mogul Empire in Aurungzebe's time.—Bernier, Vol. II. page 228. Appendix No. 4.

Composition of Army.—Bernier, Vol. I. page 233.

Omrahs.—Bernier, Vol. I. page 237. Appendix No. 5 & 6.

Retinue of Mogul Court.—Bernier, Vol. II., page 86. Appendix No. 7.

Distress caused by remittances.—Forster, Vol. I., page 8. Appendix No. 8.

Desolation of country under Mogul rule.—Bernier, Vol. I., page 229. Appendix No. 9.

Desolate state of country between Delhi and Lahore.—Bernier, Vol. II., page 120. Appendix No. 10.

Now any one conversant with History knows that, when the battle of Delhi was fought by Lord Lake in 1804, the Mogul dynasty had signally collapsed; the Government had passed into the hands of a Mahratta Hindoo power. It was unable to support the burden with which it set out a claim to be Imperial, had struggled on, and eventually succumbed. Imperial Delhi was never at any time so Imperial in its sway over India as the British power is at the present moment. The Mogul undertook a charge and failed; we succeeded to it and have conquered. The Mogul rule was a foreign element; many of its followers were foreigners. They were quite as alien to India as rulers as Germans would be to Italy; their language even was foreign, so were their tastes and feelings.

8. We have only to refer to History to see what a hard task was undertaken by the Mogul dynasty, and how often it failed. It must be recollected that the Mogul dynasty had a strong Hindoo element to contend with, so much so that we see the Mogul dynasty eventually succumbed to a Hindoo Mahratta power. But prior to its collapse, it had many years of grandeur and splendour incident on the wealth and riches of so many distant provinces being drawn to, and spent at, Imperial spots, such as Delhi, Agra, Allahabad, Lahore, Cashmere. But this drain of wealth produced great distress, and the condition of the people is thus described by one who had ample opportunities for observation.

9. The conclusion which forces itself on us at every page of Indian History is that India was never so flourishing, her people never so well off and happy as they are at the present moment. Look at the state of our own country and Court in the reign of Charles II. Look at the state of England now; have we not progressed? So has India. Bernier, in marching from Delhi to Lahore, with the camp of the Emperor, says he hardly saw a town or village the whole way. The condition of the country to the south of Delhi is spoken of by Lord Metcalfe in one of his despatches as desolate and its people little given to agricultural pursuits. Sixty-three years have elapsed, and nothing is now to be seen but well-populated villages, and sheets of wheat cultivation spread over the face of the country for miles.

10. No one can have resided, as I have for years, in districts bordering on Native States, for instance, Goorgaon, Delhi, Rohtuck, Hissar, Kurnaul, Umballa, and

Mooltan, without being struck with the fact of how traders take up their residence in villages within British territory close on the confines of Native States with a view to secure safety to life and property, and yet at the same time be able to trade in foreign territory. When I joined the Umballa district as Assistant, the independent Sikh States, which joined on to that district on every side, were under their own criminal and civil administrations, but eventually they were made amenable to our criminal jurisdiction; and no one who can look back to a period of 20 years can for a moment doubt that the strong hand of the British rule has far increased the amount of happiness and prosperity amongst the people of that part of the country. Life, property, and the honour of women are far safer now than it was under a lawless state of Native rule. At that time one petty Native State was hardly able to ward off the encroachments of its neighbours; the criminal returns of the Cis-Sutlej States may be safely referred to for statistical data to support my assertion. I can remember affrays of the most bloody character which used to take place constantly. I can recollect going out shooting with Colonel Mackeson on the banks of the Jumna, not far from Jugadree, and seeing a Chief, many of the members of whose family had been murdered at a feast in the most treacherous manner. The statistics of the Cis-Sutlej States would give a good account of the increased safety to both life and property; for in those days the estates of the numerous Putteedars around Umballa had not been settled, and there was constant aggression and resistance on the one side and the other. A village of a Native State and one of the British territory on a boarder can too often be at once distinguished,—but few trees, cultivation scanty, the people poorly clad, the cattle thin, houses out of repair.

11. Many people of a turbulent plundering character prefer a residence in a foreign State; the law does not find them out and punish them as promptly as in British territory; if detection follows an offence, it is often punished by a Native official with merely a fine. We have to refer back to past History to see how much society at large is indebted to the British Government for the suppression of the Pindarees, who spread ruin and misery over so large a portion of India. We can have no real sympathy with those who are happier under a Native rule from the chance being less of a check being imposed on their evil propensities, from a Native Government being less able than ours is to punish. How troublesome the Shekhawattee plundering Chiefs have been for years past to the Jeypore State! When too bold, they have more than once visited British territory; frequently they have made inroads on the Hissar district.

12. I cannot understand any Native State of any extent being governed so that the agriculturists can be said to be happy without a settlement of the land revenue in some shape or other; but with it and a good Chief, and a territory not too large for individual supervision, I can imagine a Native society being fairly happy. A Native Chief's army is, however, generally in a state of chronic mutiny: there is a continual distrust, a balancing of party against party; but the collection of the revenue in kind leads to such endless corruption and exaction on the part of Native subordinates, met by corresponding fraud and tricks on the part of agriculturists, as to lead to demoralization of a class of men inclined to be honest and straightforward. I see an immense advantage on this point has been gained by the British subject. I believe a man's moral disposition benefits immensely by a land revenue settlement.

13. But a Native state has often to pass through severe trials before a settled Government is secured, and thus the happiness of its subjects is frequently imperilled. A disputed succession, a weak minority, are fruitful sources of disorder; but even in this difficulty, an ability to refer to and obtain the aid of the Imperial Government is a reason why Native State subjects are more secure than they would otherwise be. Order is restored much sooner than it would be were it generally understood that the British Government would not interfere. Otherwise, immediately a dispute broke out, these numerous bodies of men, always ready to take service, would flock to the standards of the rival parties, and thus prolong a quarrel which the arbitration or order of the British Government could, if asserting its authority as a paramount power, soon dispose of. Not, however, that Chiefs should be allowed to coerce and grind down their subjects through British influence. Where no settlement of the land revenue exists, and where Kham collections are carried on with oppressive rigor, many find it more profitable to seek for military service than to cultivate their fields, and thus a very dangerous element is forced on society; for Native States keep up, comparatively speaking, large armies, and their servants and retainers are numerous; there are endless idlers about a Native Court. Our tendency is to give

large pay and employ few people; the reverse is the policy of a Native Court; it, however, gives a Native Court considerable executive assistance in having its orders carried out. But the men who are thus forced on society generally revenge themselves on it; they form powerful military combinations, are anxious for change, and overthrow the State employing it. Many soldiers employed by our Government are often the residents of Foreign States. Our Sepoy army, for example, nearly overthrew our power. Runjeet Singh's power was destroyed after his death by the army he raised, and many more instances could be cited. Thus, as an Imperial power allowing disorder in a Native State, we foster too often an evil spirit against our own power. The Mogul Empire suffered sadly from a disputed succession. Native States are constantly subject to this evil; then they can call on our Imperial power. Our mechanical constitution of succession to posts and offices gets rid of the danger attending a disputed succession, and thus we can at all times come to the aid of Native States. But we barely escaped the ruin devised against us by a military combination, although imperfect in its organization. But our settlement and its decisions on questions of rights in and to land which were unknown to a Native rule, has engendered many bitter feelings against us as a nation, which we cannot ignore. The class which seems to stand out most boldly for the ruin or misgovernment of a Native State is the banker class, and it is wonderful what good faith they maintain throughout India. But many Native bankers having partners and corresponding houses in British territory, enable them by entreaty, threats, and protests, to support a very fair position even in the midst of the most misgoverned State. Even under the Mogul rule India never presented the consolidated appearance such as that of France of the present day; it rather resembled the Prussian Empire as now consolidated by Bismarck, and if things follow the course of progress, a few years will increase the resemblance by the gradual decay of the administrative powers of Native Princes, and the subjection of their armies to strict military law as well as to a reduction in numbers. This change will be the result of civilization, not possibly of any violent convulsion as forcible as that which has affected the States of Germany. But the Indian political horizon soon is clouded. Even under the Mogul rule, foreigners (Moguls) were liberally employed; they were not residents of India; they formed a body similar to ourselves, deficient in our sterling good qualities; they held most of the important offices of State; they came from and returned to Balkh and Samarcand, as suited their interest and inclinations—never became landed proprietors until intermarriages with the people of the country had destroyed their purity of blood, and lessened the esteem in which they were held. Even now many of the leading men of Native States have been or are British subjects. The Eimanabad family, which exercises such power at the Court of Jummoo in the persons of Jawala Sahai, the father, and Dewan Kirparam, the son, Jemadar Khosal Singh, Raja Deenanath, of Runjeet Sing's Court, were British subjects. Pundit Sheodial, of Delhi, was a few years ago held in great estimation at the Court of Jeypore. Fresh currents of thought, novel forms of government in force amongst us, thus find their way gradually as Imperial measures into Native States. For instance, the Penal Code and the Procedure Code, Act VIII. of 1859, are undoubtedly in the hands of many Native officials employed in Native Courts, and form their books of reference. Our system of land revenue, as embodied in our directions to Collectors, is doubtless in the hands of many subjects of Native States. No Native can read the Penal Code and not feel how much the British Government wishes to increase and secure the personal liberty of its subjects so as to raise their position socially. An immense change of idea is thus being gradually spread abroad without our knowing it.

14. Natives like to indulge in more ceremony, show, and pomp than we English care to do; the eye, fancy, and imagination are pleased. Most Native villages are so isolated and dreary that a few days spent about a Native Court must be a relaxation; still Native rulers generally live very secluded and are surrounded with a great deal of Court pomp and ceremony which shuts out the outer world from seeing much of them. There is too often the dread of the knife of the assassin and the poisoned cup. Native Courts are very like what that of Charles II. was, and the attendants having to rub the plates with a piece of bread and eat it to show the absence of poison, reminds one very sensibly of the insecurity of a crowned head. But on grand Mahomedan festivals there is doubtless a deep tone of religious sympathy which brings and binds a Native Chief and his subjects together. Doubtless, as a matter of pride, a Native feels great satisfaction in pointing out a ruler of a country as springing from the same blood as himself; many are debarred

from this pleasure ; and I do not fancy that a Hindoo cares more for a Mahomedan ruler than he does for the British rule represented to his eyes by a British official residing at a fixed spot, with whom he considers his destiny to be bound up. To assert that a Native subject feels proud of his ruler is true in some instances, but possibly, after all, religion has more to do with the sentiment than we care to allow. Many Mahomedans object to British rule on religious grounds ; the cry of Deen Deen attained a rapid growth in 1857.

(*Sic orig.*) We all know the inherent dread there is amongst Natives of making any show of wealth. In a Native State, a display of wealth is at once a signal for plunder ; a white dress is a sign hung out by which the corrupt Native official at once resolves to plunder its owner. This does not speak much for the happiness of Native subjects, that they are always forced to feign poverty to escape utter ruin. It is only of late years that Natives have begun to understand our rule, and not to be afraid to spend their money without questioning and to let it be known that they are well-to-do in the world. [The licence tax has this objectionable tendency ; a system of inquiry will expunge as to ways, means which make a man begin to doubt as to whether the British system is not approaching that in force in Native States.] Without any mental culture, thinking merely of the passing hour or of family marriages, past and in prospect, bowing the head with submission, however oppressed, until a certain point, many Native subjects pass their lives enjoying not much more than mere animal existence.

15. Whilst to an English cultivated mind the sway exercised by Rome in the zenith of her power over her Asiatic possessions, Gaul, and Spain, excites no feelings of distaste, the spread of the influence of French conquests at and subsequent to the Revolution over the greater portion of Europe is opposed to the feelings of most of us, and from causes which we need not dwell on, the sway exercised by Austria over Italy was opposed to the feelings of most of us. We are immediately affected by the events of the day, which quickens our interest in passing events. Somehow or other the supremacy of England in India has not escaped the criticism of a certain party. But leaving the rights and wrongs out of the question in the present discussion as to our original acquisition of power in India, we may trace a new idea which has lately sprung up, an assertion that Natives are disposed to state that, compared with the system of administration in force in Native Independent States, our system of administration is inferior. Now for a Native's opinion to be worth much, he should possess a competent knowledge of the two systems, and then his opinion will be listened to with respect and command attention, provided the speaker be at the same time apt, observant, and intelligent ; but few Natives—only those who have filled very high posts in a Native State and at the same time closely watched our English system—would be able to form a correct opinion. A Native without much experience as to administration will probably ground his partiality for a Native system of independent State Government on certain social defects or differences observable in the English character as compared with the Native. But this is not the point we have to deal with. We require a close comparison of results actually achieved by either system of government. When we come to compare the two systems, we are at once astonished how many branches of administration are excluded from the comparison, the Independent State having not even yet thought of them. As regards the main worth of the machinery for collecting the land revenue and enforcing order, our system is rather an improvement on a Native system than a direct deviation from it ; for instance, a district with its Magistrate at its head, and a Commissioner to supervise three, four, or five districts, finds a very near parallel in the Native Nazim and his subordinate Kardars. The Village Accountant still exists with us, as with the Native Ruler the Canoongoe or expounder of titles and history of estates ; every large town still has its Cazee, its Mooftee, and its Chowdrees or Municipal Committees. Villages still have their Head-men, their Village Watch-men, their Reporters, as they had hundreds of years ago. The Kardar, the Nazim in the person of European Officers, are more tied by law and defined rules than they used to be, the Supreme Government laying down from time to time that such and such principles of law, such and such maxims of political economy, are to be followed. For instance, when grain is dear in one place and cheap at another, it does not interfere with exports or imports ; a Native State at once, when grain is being exported, prohibits its export, and directs that grain shall be sold at such and such fixed prices. The Native officials of a Native State are too often under no control, and are frequently chosen, not from capacity, but from Court influence.

The administration of a Native State seldom, even with a very good ruler, works well from the want of subordination amongst its officials to the ruling power.

A Railway, Educational, Legislative, Telegraphic, Medical, Marine, Public Works Department are unknown to Native States, and few Native States encourage the making of roads. As regards military arrangements, the Commandant of one corps will seldom obey the Commandant of another; he gets his orders direct, consequently military movements are always likely to miscarry. Added to this, troops are too often commanded by men on an expedition who have had no military training. Natives do not divide off these departments as we do; the consequence is a want of prompt action.

The Finances of Native States are generally in the greatest confusion; arrears so constant as to quite paralyze all establishments. Native States, as a general rule, do not know a regular system of payment. I copy out from Elphinstone for reference a sketch on Imperial

* Vide Appendix No. 14.

Government.*

The difference between the administration of an Independent State and the Imperial British Government is so great that the two hardly admit of a close comparison. It is enough to say that the one is Imperial, commands the resources, ability, and energy of a whole nation, while an Independent Native State, even of the first order, dwindles into insignificance when a comparison is instituted. The three great points in which we excel are organization, civil and military discipline, and vigour in execution. Our orders are readily obeyed, and when the moment for prompt action arrives we, as a general rule, act with vigour.

We are bound together with a strong national tie, and can trust each other in the worst times. Native administrators are full of distrust; they bring an army together fairly enough, but when the moment for action arrives, hesitation and want of implicit attention to orders leads to defeat. It is a mistake to suppose that a number of capable men ever are collected together in a Native State. Mutual distrust is too great; family cliques thus spring up, and a general discouragement to merit.

An Englishman who has never left England can hardly realize English and Native official life in India, invariably despotic, but with but little public opinion to control. Here consists one of our chief weaknesses.

We are too much accustomed in England to regard the Continent of India as containing a race uniform in origin, language, and feelings; but the truth is, its people differ more than those spread over the Continent of Europe. A man from the southern portion of Madras is darker as compared with a man from our north-west frontier than an Italian as compared with one of pure fair Saxon complexion. The language of a man from the Madras Presidency would be unintelligible to a man of one of our north-west frontier tribes; and a man from Lahore, who might praise our Government for certain qualities, in travelling down through India, would doubtless be astonished with varied shades of opinion and thought, until he finally quitted India for Ceylon. The Native State which has suffered long from internal anarchy and misrule would at once appreciate the value of a strong rule to enable its orders to be carried out even harshly, provided the main body of the people was thus enabled to live in peace and quietness. But probably most educated men would apprehend that the presence of nearly 100,000 Englishmen of all classes in India, many of them holding the very highest appointments which the State has in its gift, must decrease the number of appointments which the people of Hindoostan can ever expect to hold; and many men capable of forming a fair judgment would naturally infer that such a large influx of foreigners must check the mental energy, vigour, and corporations of the people of Hindoostan. But our position has forced this drawback on us. We were willing to rule the country prior to the events of 1857 with cheaper materials;—a Native, not an European army as the Mogul dynasty supplied the place of a cognate Mogul army, by the place of persons of blood derived from India, and failed, so have we. Doubtless the materials with which we are forced to work and govern are more costly than those which a Native State could afford; but the evil is in a great measure attendant on our position in Hindoostan—an evil which is doubtless patent. We secure many solid advantages for Hindoostan, and hope to see her progress by concessions which we shall be from time to time enabled to make. We shall doubtless be able to admit Natives more freely to the Covenanted branches of the Service, and be able to confer commands of Native Regiments on Natives after the fashion of our Police Commandants, whose valuable services we obtained from the *debris* of the Sikh Empire. Still even, as matters now stand, a vast crowd of Natives is employed by us; many in very important posts; their pay

is liberal and certain, and thus many have during the past 50 years been able to raise their families from indigence to ease and comfort; our towns and villages are full of men of this sort, and it is very pleasant to see our subjects thus prosper even under the most unfavourable terms of our Government.

Native States give small pay; it is uncertain; tenure of office is doubtful; but plunder, which can be amassed in a few years, is a thing much coveted. Still many miss hereditary service without any great or marked qualifications. A Native State has a good deal to offer in this respect that is tempting. In a Native State a son often succeeds a father as a matter of course; he takes up the very same office. A General has his son as a General to succeed him; with us a General's son must be an Ensign, and so creep gradually up the ladder. There is doubtless something very taking about the Native style of reward for family service.

With us the post of ambition is reached late in life. Old age soon stops the career of the aspirant who has arrived at the last step of the ladder, and the son of the man who has thus faithfully served his country is too often left a beggar in the world. As long as the bark of State moves on smoothly through calm water, our administration seems to progress fairly enough; but when disorder breaks out for a time, we appear to feel the isolation of our position. Natives stand aloof; they are doubtful which will be the winning side; and a Native has at all times a good deal of treachery and cunning in his disposition. We seem in peaceful times to mix up the Natives of the country too little with us in the general administration of the country; there is a want of sympathy between the governing and the governed body; this is doubtless a source of very great weakness to us, particularly so in times of danger. It is true that strong English valour tells so much with us, and tells why in its absence a country breaks up, Natives having so little reliance on each other; still each village and town will even in the worst times make admirable arrangements for protection, but rather as separate bodies than bodies acting in unison to aid the general power of the administration. It is too often rather trying to tide over a political danger and then fall in with the party which wins; still the mere keeping a country or town quiet is a social advantage gained.

16. In a Native State each case is taken up and decided on its own merits. With us, from our mixed Government of English and Native, men who have arrived at a certain stage of civilization and men who have not, we have to give out general principles, and thus the orders of our Courts to Natives often appear too harsh and crude. Our Police has enormous power, and offences under the Penal Code are too often sought for and punished, which would be thought nothing of in a Native State. We are considered too strait-laced, and constitutionally harsh in our punishments.

We have an excellent skeleton of an administration without its being filled up with those active sympathies of the people at large, and thus invigorated. "The Government orders I obey" is the tacit acquiescence. It resembles an English family from which the father is forced to live absent. A thousand sympathies are exercised and felt by the father who lives in the midst of his family, of which the absent head knows and feels nothing. To test the condition of a Native Independent State, the class of petitions brought before a Chief, an Agent of the British Government, will give a fair index as to what is really going on. I can recollect a complaint which was often made by subjects of Native States when I was posted at Umballa, which was that a Native official, or person with whom the petitioner had a quarrel and was powerful, had carried off and was keeping possession of everything he had in the world—wife, children, cattle, produce of fields, &c., &c. This at once speaks of a lawless state of things. The Independent States which I have seen have been wanting as regards a system of Education. They have no schools for teaching Anatomy or the practice of Medicine; no schools for teaching the rudiments of Civil Engineering.

17. The objection raised amongst Natives to the British rule is too often a deep objection; for instance, by traders that such and such towns are not what they formerly were, for instance Lahore; that Runjeet Singh and his Court retainers, Native Chiefs, and large army, spent large sums at Lahore, which are now but poorly compensated for by the expenditure disbursed under the British Government. Then there is the cry that such and such a branch of trade has been especially injured,—just as the Coventry people called out some time ago regarding the sale of their ribands—for instance, that the Native silk trade has been injured; again, the trade in shawls, turbans, saddle-cloths, loongee chudders, and so on. The jeweller calls out that there is not the same demand for expensive Native jewels. The tent-makers

sigh in vain for the days when Runjeet Singh and his Court had such handsome pushminah tents made for their use. Elephants are not in the demand they used to be, and so on. There are no expensive horse, camel, elephant, bullock trappings called for, and thus numbers of people refer to the past as the good old time. In England the same thing has taken place, though not exactly in our day. Gentlemen of fortune are content to dispense with all useless show either in their dress or way of living. The expensive suits of clothes, on the possession of which Pepys love to dwell on, are no longer called for. It would now be thought extravagant for a Prince to owe above 5,000*l.* to his haberdasher. The account of the coronation procession of Charles II. gives a very fair idea of the glittering assemblies which used to pass up and down the streets of Lahore during the reign of Runjeet Singh. But the element of a mutinous, overbearing, headstrong Native army destroyed its own government, and it passed into the hands of the British Government, under whose rule, after a lapse of nearly 20 years, it cannot be said that the Punjab has retrograded. Wealth is more equally diffused, and the country is more prosperous than it ever was in the time of Runjeet Singh, and he was a very good specimen of a Native ruler; but the vigour and the constitution of the government could not provide an equally able successor, and thus, as is too often the case with Native governments, the country was convulsed, passed through a stiff ordeal, and now owes allegiance to the British Government.

18. An Englishman who has never travelled out of England can hardly realize the immense extent of our Indian empire, the changes of climate which are found to exist, and the various kingdoms into which India is divided off, each with some marked peculiarity of each language, soil, and religion. On the eastern, western, and northern boundary of India we have the stupendous ranges of the Himalayan Mountains encircling us as it were with a diadem of perpetual snow, from which vast torrents flow and intersect our plain country, to water and fertilize it, form roads for our merchandise, and then join the water of the ocean, which, as the Indian Peninsular juts out into it, is washed on two sides by it. Thus our southern territories are cooled by sea breezes, and watered by those storms which burst forth with such fury during the monsoon, or periodical rainy season. Thus we find great extremes of heat and cold spread over a country which is generally speaking flat, but relieved as it were occasionally by fine mountain ranges, of which Madras can boast of the Neilgherries, Bombay of the Mahableshwar Hills. Thus, under British rule, the limits of great kingdoms have been marked off more or less under Imperial sway, and all feel the presence of its ruling power. A Viceroy presides with Imperial dignity over the whole of India; subordinate to him are:

Governor	-	-	-	Madras.
Governor	-	-	-	Bombay.
Lieutenant-Governor	-	-	-	Bengal.
Ditto	-	-	-	North-Western Provinces (Agra).
Ditto	-	-	-	Punjab and its Dependencies.
Chief Commissioner	-	-	-	Oudh.
Ditto	-	-	-	Central Provinces.
Ditto	-	-	-	Burmah.
Ditto	-	-	-	Scinde.
Commissioner	-	-	-	Mysore.
Resident of	-	-	-	Hyderabad.
Agent to Governor-General for	-	-	-	Rajpootana.
Agent at	-	-	-	Indore, with subordinate European Officials posted at Native Court.
Resident of	-	-	-	Nepaul.

Thus a magnificent control is exercised over which the eye can hardly wander and group the vast territorial power of British supremacy.

Each European officer has his staff of officers, European and Native, laid down according to a sanctioned schedule. Each Government is divided off into so many Commissionerships, which are again divided into districts; they into sub-divisions presided over by Native officials.

To each Governorship, Lieutenant Governorship, Chief Commissionership, or Agency, numerous Chiefs are attached more or less independent according to their political importance, still all owing fealty to the Crown of England. When I mention that the Maharajah of Jummoo alone has an army of 30,000 men, Gwalior probably not a less number, the Nizam of Hyderabad a still larger number, it will be seen that, besides the army maintained by England for Imperial purposes, a vast body of troops in the pay of Native Chiefs is spread over the vast Peninsula of India, soon agitated with the vibrations of any political storm, at all times seething with sedition

and violence. Many of the men employed by these Princes or Chiefs have been subjected either to a French or English system of drill, and many are closely allied in race and sympathy with the army which brought on the crisis of 1857. Thus it will be at once felt how important to our strength unity is, not only of purpose but of feeling. A very dangerous viper is concealed under the comparison between the British and Native system as now propounded.

England has felt it when it has been discussed whether Scotland and Ireland would have fared better with their own system of government. Italy has been keenly sensitive to the same question, and it has vibrated through her whole frame. The States of America have heard the question asked, and the reply has been given and sealed with torrents of blood and Republican unity. These questions, as unsettling the minds of many in India, may still lay many a gallant head low; but we have a great duty imposed on us to progress and do all whilst we are permitted to hold Imperial sway for the general benefit of the 200 millions entrusted to us—a charge so great as to make us shrink even with the vast resources at our command.

The Mogul dynasty in the height of its power was a magnificent sway; and we must not forget that, during the events of 1857, the hearts of many were with its restoration.

19. But possibly the best plan will be for me to draw up a brief sketch of the component parts of a charge under British control and one under Native control; the person unconnected with the service of Government will then doubtless be able to form some kind of opinion of his own as to the efficacy of a British or Native system of administration, and not be biassed, without substantial proofs, by vague statements of interested Natives not in a position to give either a sound opinion or a correct statement of the relative merits and demerits of a State governed exclusively by Natives, or by a mixture of Europeans and Natives. But it could have been hoped that the inquiry had been conducted on fixed data, considered as measures of effective or non-effective management with reference to Algeria and India, where we find a mixed government; and to Persia and Turkey, where we find the governing European element absent. The data naturally suggesting themselves would be—

Wealth of Shahjehan.—Elphinstone, Vol. II, page 399. Appendix No. 11.

Revenue of Aurungzebe.—Bernier, Vol. II, page 228. Appendix No. 4.

Taxation.—Cunningham, page 365. Appendix No. 12.

English and Native character contrasted.—Jeffrey, pages 350–51 and 343. Appendix No. 13.

Increase or decrease of population;

Increase or decrease of revenue;

Taxation per head during any stated periods fixed on;

State of crime for any two stated periods;

Emigration or otherwise of inhabitants; and so on.

Where we find a mixed government, doubtless the carrying on the administration of the country in two or more languages will be more expensive; and in the case of India so many correspondences are now forwarded to the Secretary of State for India. Foreigners serving a State as we English do in India, both Civil and Military, also impose an extra charge on the State compared to what would be incurred were selections made for all the services in India. Medicines, ammunition, stores of all kinds, are thus rendered often-times more costly. The sketch which I propose to draw is between the Government of the Punjab and that of the Native State of Bhawalpoor, which bounds the western portion of this division. On the eastern boundary of the Punjab, the distracted state of Afghanistan proves how difficult it is to secure a quiet succession after the death of a Chief, and how the fruits of peace, collected during a strong rule, are so soon dissipated amongst contending aspirants for a throne. The fact of a Mahomedan ruler being a polygamist raises up a host of sons, who, as soon as their father is dead, endeavour to raise themselves to supreme power. This constantly leads to extreme jealousy on the part of a Chief during his lifetime which extends itself to the Ministers of State, since it is feared one Minister may favour the pretensions of one son more than another, and thus the energy and zeal of many servants of State, willing to serve it faithfully, is checked.

20. A Lieutenant-Governor presides over the Punjab—a territory of our Indian Empire containing about 14 millions of people of a hardy, bold, industrious, warlike character. The climate for eight months of the year is temperate; for four, hot and trying to the European constitution; seven rivers which rise in the Himalayan Mountains flow through the Punjab, and by overflowing their banks when the hot weather sets in about March or April, fertilize large tracts of country, where fine wheat is produced. The Lieutenant-Governor is aided in his charge by a Staff consisting of

Europeans and Natives; by an army made up of Europeans and Natives; by a strong Police officered by European gentlemen; by a large Revenue establishment; by a Postal, Medical, and Educational Department; as well as by a Public Works Department; by a Forest Department; by Officers specially trained for the Judicial Department. The Government stands thus—

Sketch of Mogul Administration.—
Elphinstone, Vol II., page 299.

Punjab Revenue.—Burnes, Vol. II.,
page 288.

Character of Government under
Runjeet Singh.—Burnes, Vol. II.,
page 295, Appendix No. 14–16.

Lieutenant Governor.
Private Secretary.
Secretary to Government, Punjab.
Assistant Secretary to Government, Punjab.
Meer Moonshee.
Military Secretary.
Secretary to Government, Public Works Department.
Secretary to Government, Railway Department.
Director General of Public Instruction.
Director General of Post Offices.
Inspector General of Jails.
Inspector General of Police.
Conservator of Forests.
Chief Court, presided over by two Judges, one an English Barrister.
Registrar.
Financial Commissioner.
Secretary.
Commissioners of Divisions.
Deputy Commissioners.
Assistant Commissioners.
Extra Assistant Commissioners.
Sub-Collectors or Tehseeldars.

It will be understood how the Secretary in the Public Works Department, the Post-master General, the Director of Public Instruction, has his subordinate departments spread over the country, over which, from a centre, he exercises a special or general control. Each Deputy Commissioner has his Staff under him; he will be immediately aided by a Covenanted European Assistant, and probably by a Native Assistant, and one Uncovenanted Assistant. Each district will be divided off into four Collectorships or Tehseeldarships. Each district will collect about 10 or 14 lakhs of revenue; contains on an average 1,000 villages, 473,942 inhabitants; have 400 or 500 Police attached to it, 800 or 1,000 village watchmen, and 100 Revenue Chuprassees or Messengers.

The Troops, European and Native, are located at fixed strategical posts.

The Courts of Justice will commence with the Chief Court, which, as a general rule, except for the trial of Europeans, may be regarded as an Appellate Court.

Court of Commissioner of a Division.—Court of Appeal, Civil, Criminal, and Revenue. As regards criminal cases of a certain nature, a Court of Assize.

Court of Deputy Commissioner.—Court of Appeal, Civil Criminal Revenue; Original jurisdiction, Civil, Criminal, Revenue.

Courts of Assistants, Courts of Tehseeldars.—Original, Civil, Criminal, Revenue jurisdiction. Appeals from these Officers are heard, according to the class of powers entrusted to them, either by a Commissioner or Deputy Commissioner.

But it must be observed that a vast amount of the work on which the prosperity of the country and happiness of the people depend is performed by Native Extra Assistants, Tehseeldars, Naib Tehseeldars. For the Punjab, the Penal Code is the guide in criminal matters, aided by the Code of Criminal Procedure; and for the Civil Courts, we have a Code of Civil Law.—*Code of Civil Procedure, Act VIII. of 1859.*

The Revenue work is regulated by circulars and orders issued from time to time by the Financial Commissioner and Commissioners of Divisions.

Thus, a close supervision of districts is very essential, for the Police may oppress the people by taking up cases with which they have no right to meddle. Each district has two European Officers attached to it. Again, the Revenue Department may endeavour to extort money; but our settlement at once bars corruption of this sort to a great extent, since each village very well knows what it has to pay. No one is selected for the post of Tehseeldar without being a tried man, and I can safely assert that we have in our Tehseeldars a most able, valuable body of men, who do an immense amount of work, and do it very well. Therefore, as long as the Civil administration is in working order, nothing can go far wrong without being detected and corrected. The climate induces indolence, therefore constant supervision is absolutely necessary. It will be seen how the supervising department clusters round the Lieutenant Governor. There is a free intercourse between the

people and all controlling officers, so much so that all can get a hearing who are disposed to; but the mass of the people finds no necessity for leaving home, and as a District Officer or a Commissioner of a division generally visits his jurisdiction once a year, if not oftener, those who have complaints of a local character can bring them forward. Rights are every day being more and more valuable and intricate; this precludes our conducting *viva voce* inquiries and giving summary decisions. As few Natives can read and write, taking the masses into account, our falling too much into a paper system is an evil, but difficult to obviate. A Native Court carries on a good deal of work by verbal orders and summary inquiries drawn up in the shape of memoranda, giving the abstract of evidence given or facts elicited; but we prefer taking the evidence, whatever it may be, and making it form part of the record. It will be seen that those about a Lieutenant Governor all have specific duties assigned to them. A Native Court encourages a number of hangers-on, some of whom receive allowances without any specific duties being made over to them; they are available when called for.

For military purposes the Punjab is divided into three divisional circles under the control of the Commander-in-Chief, and one subdivision under the immediate orders of the Lieutenant Governor; the reason for this separate jurisdiction being the command of the Punjab frontier force, a body of men not placed under the care of the Commander-in-Chief. To all intents and purposes, the Government of the Punjab is a pure despotism; the people, as a body, have no voice in their government, and this is the character of Governments generally throughout India. A few matters are passed on beyond the jurisdiction of the Lieutenant Governor; for instance, the general result of accounts passes on, and is controlled by an office from Calcutta.

The Legislative Council works with the Viceroy, and the Postal department, as well as the Department of Public Works, is controlled to a considerable extent beyond the limits of the Punjab. With a pure despotism, such as we have to deal with, it is evident that the possible abuse of patronage, European and Native, is a danger against which we have most seriously to guard; for when once an incentive to zeal on the score of merit is removed, our machinery of Government is likely to work but languidly. As long as times are peaceable and no political or religious question agitates the Native mind, the Government progresses very favourably, the balance of Native good-will and support being generally very much in our favour. But as soon as disturbances break out and troops are removed from one part of the country, the machinery of State at once becomes clogged. This was felt so weightily throughout India during the events of 1857. The Punjab escaped general tumult from a feeling prevalent with two large sections of the community. The Sikhs had seen us always victorious, and had but recently felt the weight of our military power. The Mahomedans of the frontier cared not to assist the Court of Delhi, which they saw was virtually upheld by a Hindoo Sepoy army; having so recently escaped from the dominion of a Hindoo power, they did not care to again place themselves within its power. The country, as to town and village communities, is very cleverly organized,—the result of many causes, but isolated from the effects wrought by our Government. We derive great facility in having our orders as a Government carried out in times of peace, and if in times of tumult a country or tract of country is with us, we derive immediate strength; for our great want is generally men and supplies, as also carriage. A Native State seems to be often very strong and compact just at the moment our Government seems weak and perplexed; the reason I take it to be, a Native Chief chooses his side and his subjects follow him. But during 1857 many Chiefs were perplexed with the mutinous contingents which had been formed and attached to those Courts by British authority. Our Government has a great tendency to weaken European characters, to make them feel official responsibility too sharply, and pay for petty official errors too dearly. Thus when difficulties take place there is a chance of a want of vigour or energy, and the country over which a Government official presides sinks from sheer inaction into disorder.

Our great danger generally throughout India is Military disorder urged on by an active or passive Native population. The machinery of Government, which works independent of the heads of provinces, is now somewhat cumbrous, and thus the energy of the head of a province is cramped by a too Imperial supervision.

21. The territory of Bhawalpore affords a very fair example of the constitution of a Native State, the vicissitudes to which it may be exposed, and misery inflicted on a large extent of country in close proximity to British possessions. It forms our

eastern boundary for about 300 miles. Maharajah Runjeet Singh's designs on Bhawalpore caused our intervention through our representative Sir Claude Wade, and Bhawalpore has ever since been closely associated with the British Government. During the Cabul war, and the campaign against Moolraj at Mooltan, Bhawal Khan was firmly united with the British Government and proved himself to be its very faithful ally. But on his death the succession was disputed, and since then, until the British Government interfered in July 1866, and assumed the management of the country at the earnest solicitation of the Court and Ministers, the administration had passed from one bad stage to another, so that in July 1866 the Government could no longer be carried on, so corrupt and disorganised was it. For past years there had been constant outbreaks, which were suppressed by the army with great loss to the people and demoralisation of the parts of the country where they took place. During the time of Bhawal Khan the country was well held together; he seems to have taken great interest in the Government, which, however, before his death, is stated to have suffered from his irritable temper—the result of disease. This State keeps up an army of about 5,000 men; the Infantry are principally men from the Bhawalpore country, excepting a body of about 300 Rohillas recruited from about Bonair. The Cavalry contains in its ranks some few Pathans. State affairs appear to have been conducted to a great extent verbally, thus getting rid of a great deal of the writing in use amongst British Officials. The Mahomedan Law is the standard to which all references connected with it are referred, and the Hindoo portion of Bhawal Khan's subjects thus come off but badly. That a Mahomedan should be forced to pay a debt to a Hindoo was considered an insult; but in most Native States the rules against debtors are much more lenient and uncertain than with us. Bhawal Khan and his successors appear to have been very voluptuous and dissipated. At the same time, shooting, in which the Khans of Bhawalpore indulged freely, involved a good deal of personal fatigue. It was customary for the Nawab or Khan to seize any woman whom he thought fit, married or unmarried, and one family was mentioned to me at Bhawalpore in which remonstrance on the part of the husband caused his death. But very soon after the British Government assumed charge of Bhawalpore, I heard a Native say to another—"You know force as regards women will not now be tolerated." To an inert Nawab a clever Minister was an essential; but qualifications too often ended in jealousy on the part of the Khan, and the death of the Minister. Thus distrust was engendered, and the Nawab was in constant dread of assassination; officials in fear of sudden disgrace and ruin. Thus gradually the administration tottered. Appointments of all sorts were freely bought and sold year by year. The Treasury was supplied annually by a certain sum of money, and the people, their collections being in kind, were plundered in all directions. In many parts lands were entirely deserted, and, what is unusual with a Native State, the bankers and traders had left Bhawalpore in large numbers; and I saw in June last several streets entirely deserted. At that time the army was in a mutinous condition, and had not been paid for four months. If an order was given by one Minister it was at once countermanded by some one else. The Kardars were under no control, and were almost independent of the Government, doing just as their fancy prompted them. But with a strong rule the Government of this territory has revived wonderfully during the space of one year; the good points of a Native Government have been made use of, and orders when given are now carried out very promptly. Since this country came under British management in 1866, numbers have returned home. I myself saw parties of forty or fifty passing my house in September and October 1866. At the present moment, our Government carries a great deal of weight with it; its intention being known is enough to secure compliance with its orders. This has been fully proved in the Bhawalpore State. I saw many Natives during the very worst days of 1857, and the general opinion expressed was a sense of the justness of our rule and of the ease and comfort under which people lived, and a wish was often expressed to me that the British Government might be again firmly re-established, and that things might go on as they had done prior to May 1857, in peace and quietness.

As a full report will be submitted by the Superintendent in charge of Bhawalpore, I have not thought fit to enter as fully into details regarding the government of this State as I would otherwise have done.

Whatever the difficulties of our position as a reigning power are and may be, there is no doubt that we carry with us the good-will of thousands. Many, doubtless, are loyal from interested motives; but to continue strong we must be

Imperial and always prepared to enforce our orders, and not to permit any Native State for a moment to affect equality with us; for an assumption of equality is but preparatory to throwing down the gauntlet and contending for supremacy.

APPENDIX No. 1.

REGARDING SUTTEE.—Bernier, Volume II., page 18.

At Lahore I saw a most beautiful young widow sacrificed, who could not, I think, have been more than 12 years of age. The poor little creature appeared more dead than alive when she approached the dreadful pit; the agony of her mind cannot be described; she trembled and wept bitterly; but three or four of the Brahmins, assisted by an old woman who held her under the arm, forced the unwilling victim toward the fatal spot, seated her on the wood, tied her hands and feet lest she should run away, and in that situation the innocent creature was burnt alive. I found it difficult to repress my feelings, and to prevent their bursting forth into clamorous and unavailing rage; but restrained by prudential considerations, I contented myself with silently lamenting the abominable superstition of those people, and applied to it the language of the poet when speaking of Iphigenia, whom her father Agamemnon had offered in sacrifice to Diana.

APPENDIX No. 2.

PERSECUTION OF CHRISTIANS BY MOGUL COURT.—Bernier, Volume I., page 198.

The misery of these people is unparalleled in the history of modern times; it nearly resembled the grievous captivity of Babylon; for even the children, priests, and monks shared the universal doom. The handsome women, as well married as single, became inmates of the seraglio; those of a more advanced age or of inferior beauty were distributed among the Omrahs; little children underwent the rite of circumcision and were made pages, and the men of adult age, allured for the most part by fair promises, or terrified by the daily threat of throwing them under the elephant's feet, renounced the Christian faith. Some of the monks, however, remained faithful to their creed, and were conveyed to Goa and other Portuguese settlements by the kind exertions of the Jesuits and missionaries at Agra, who, notwithstanding all this calamity, continued in their dwelling, and were enabled to accomplish their benevolent purpose by the powerful aid of money and the warm intercession of their friends.

APPENDIX No. 3.

ANTIQUITY OF CUSTOMS FOR CONSIDERATION OF OX.—Cunningham, pages 335–336.

It is curious that the Greeks and Romans believed the life of the ox to have been held sacred during the Golden Age; and Cicero quotes Aratus to show that it was only during the Iron Age the flesh of cattle began to be eaten.—(On the Nature of the Gods.—Franklin's Translation, page 154.)

APPENDIX No. 4.

REVENUE AND LIMITS OF MOGUL EMPIRE IN AURUNGZEBE'S TIME.—Bernier, Volume II., page 228.

Under Aurungzebe's reign the Empire attained its full measure of extent. His authority reached from the 10th to the 25th degree of latitude, and nearly as much in longitude, and his revenue exceeded thirty-two millions of pounds sterling in a country where the products of the earth are about four times as cheap as in England.

APPENDIX No. 5.

COMPOSITION OF ARMY IN MOGUL SERVICE.—Bernier, Volume I., page 233.

It is material to remark that the Great Mogul is a Mahomedan of the same sect as the Sounnys, who, believing with the Turks that Osman was the true successor of Mahomed, are distinguished by the name of Osmanlees. The majority of his courtiers, however, being Persians, are of the party known by the appellation of Schias, believers in the real succession of Ali. Moreover, the Great Mogul is a foreigner in Hindoostan, a descendant of Tamerlane, Chief of those Moguls from Tartary who, in the year 1401, overran and conquered India. Consequently he finds himself in a hostile country or nearly so—a country containing hundreds of Pagans to one Mogul, or even to one Mahomedan. To maintain himself in such a country in the midst of domestic and powerful enemies, and to be always prepared against any hostile movement on the side of Persia or Usbec, he is under the necessity of keeping up numerous armies even in time of peace. These armies are composed either of natives, such as Rajputs and Patans, or of genuine Moguls and people, who, though less esteemed, are called Moguls, because white men, foreigners, and

Mahomedans. The Court itself does not now consist, as originally, of real Moguls; but is a medley of Usbees, Persians, Arabs, and Turks, or descendants from all these people known, as I said before, by the general appellation of Moguls. It should be added, however, that children of the third or fourth generation, who have the brown complexion and the languid manner of the native Indians, are held in much less respect than new comers, and are seldom invested with official situations. They consider themselves happy if permitted to serve as private soldiers in the Infantry or Cavalry.

APPENDIX No. 6.

OMRAHS.—Bernier, Volume I., page 237.

It must not be imagined that the Omrahs or lords of the Mogul's Court are members of ancient families, as our nobility in France. The King being proprietor of all the lands in the Empire, there can exist neither Dukedoms nor Marquisates, nor can any family be found possessed of wealth arising from a domain and living upon its own patrimony. The courtiers are often not even descendants of Omrahs, because the King being heir of all their possessions, no family can long maintain its distinction, but, after the Omrah's death, is soon extinguished, and the sons, or at least the grandsons reduced generally to a state bordering on mendicity, and compelled to enlist as common men in the Cavalry of some Omrah. The King, however, usually bestows a small pension on the widow and often on the family; and if the Omrah's life be sufficiently prolonged, he may obtain the advancement of his children by royal favour, particularly if their persons be well formed, and their complexions sufficiently fair to enable them to pass for genuine Moguls.

APPENDIX No. 7.

RETINUE OF MOGUL COURT.—Bernier, Volume II., page 86.

He is attended not only by the thirty-five thousand Cavalry which at all times compose his body guard, and by Infantry exceeding ten thousand in number, but likewise by the heavy Artillery and the light or stirrup Artillery, so called because it is inseparable from the King's person, which the large pieces of ordnance must occasionally quit for the high roads, in order that they may proceed with greater facility. The heavy Artillery consists of seventy pieces, mostly of brass. Many of these cannon are so ponderous that twenty yoke of oxen are necessary to draw them along, and some, when the road is steep or rugged, require the aid of elephants, in addition to the oxen, to push the carriage-wheels with their heads and trunks. The stirrup Artillery is composed of fifty or sixty small field-pieces, all of brass, each mounted, as I have observed elsewhere, on a small carriage of neat construction and beautifully painted—decorated with a number of red streamers, and drawn by two handsome horses, driven by an artilleryman. There is always a third or relay horse which is led by an assistant gunner. These field-pieces travel at a quick rate that they may be ranged in front of the royal tent in sufficient time to fire a volley as a signal to the troops of the Kings' arrival.

APPENDIX No. 8.

DISTRESS CAUSED BY REMITTANCES.—Forster, Volume I., page 8.

From the period of Aurungzebe's death until nearly the date of our territorial establishment in India, when the Mogul Empire still preserved a large possession of its power, the balance of the revenues of Bengal was punctually conveyed in specie and bills to the Imperial Treasury. The remittance of this amount has been known to cause so great a scarcity of money that many persons, possessed of even large property, have incurred difficulties in defraying their domestic expenses.

APPENDIX No. 9.

DESOLATION OF COUNTRY UNDER MOGUL RULE.—Bernier, Volume I., pages 229, 230, 231.

But there are many circumstances to be considered as forming a counterpoise to these riches.

I.—Of the vast tracts of country constituting the Empire of Hindoostan many are little more than sand or barren mountains, badly cultivated and thinly peopled, and even a considerable portion of the good land remains untilld from want of labourers, many of whom perish in consequence of the bad treatment they experience from the Governors. These poor people, when incapable of discharging the demands of their rapacious lords, are not only often deprived of the means of subsistence, but are bereft of their children, who are carried away as slaves. Thus it happens that many of the peasantry, driven to despair by so execrable a tyranny, abandon the country and seek a more tolerable mode of existence either in the towns or camps, as porters, carriers of water, or Cavalry servants. Sometimes they fly to the territories of a Rajah, because there they find less oppression and are allowed a greater degree of comfort.

II.—The Empire of the Great Mogul comprehends several nations over which he is not absolute master. Most of them still retain their own peculiar Chiefs or Sovereigns, who obey the Mogul, or pay him tribute only, from compulsion. In many instances this tribute is of trifling amount, in others, none is paid; and I shall adduce instances of nations which instead of paying receive tribute.

The petty sovereignties bordering the Persian frontiers, for example, seldom pay tribute either to the Mogul or to the King of Persia. Nor can the former be said to receive anything considerable from the people of Beloochistan, Afghanistan, and other mountaineers, who indeed seem to feel nearly independent of him, as was proved by their conduct when the Mogul marched from Attock on the Indus to Cabul, for the purpose of besieging Candahar. By stopping the supply of water from the mountains and preventing its descent into the fields contiguous to the public road, they completely arrested the army on its march, until the mountaineers received from the Mogul the presents which they had solicited in the way of alms.

APPENDIX No. 10.

DESOLATE STATE OF COUNTRY BETWEEN DELHI AND LAHORE.—Bernier, Volume II., page 120.

I shall say nothing of the towns and villages between Delhi and Lahore. I have in fact scarcely seen any of them. My Aga's station not being in the centre of the army where the high road is often found, but in the front of the right wing, it was our custom to traverse fields and bye-paths during the night, guided by the stars, frequently mistaking our way and marching five or six leagues instead of three or four—the usual distance between two encampments—till daylight again set us right.

APPENDIX No. 11.

WEALTH OF SHAHJEHAN.—Elphinstone, Volume II., page 399.

All these vast undertakings were managed with so much economy that, after defraying the expenses of his great expeditions to Candahar, his wars in Bulkh, and other heavy charges, and maintaining a regular Army of 200,000 Horse, Shahjehan left a treasure which some reckon at near £6,000,000 and some at £24,000,000 sterling in coin, besides his vast accumulation in wrought gold and silver and in jewels.*

APPENDIX No. 12.

TAXATION.—Cunningham, page 365.

The proportions of the land tax to the general revenues of British India are nearly as follows:—

Bengal, $\frac{2}{3}$; Bombay, $\frac{2}{3}$; Madras, $\frac{3}{4}$; Agra, $\frac{4}{5}$; Average = $\frac{2}{3}$ of the whole.

In some European States the proportions are nearly as below:—

England, $\frac{1}{2}$; France, $\frac{1}{4}$; Spain, $\frac{1}{7}$ (perhaps some error);

Belgium, $\frac{2}{17}$; Prussia, $\frac{2}{17}$; Naples, $\frac{1}{4}$; Austria, $\frac{1}{2}$.

In the United States of America the revenue is almost wholly derived from customs.

APPENDIX No. 13.

ENGLISH AND NATIVE CHARACTER CONTRASTED.—Jeffrey, pages 350–51, and page 343.

The most remarkable piece of statistics, however, with which he [Baber] has furnished us is in his account of Hindoostan, which he first entered as a conqueror in 1525. It here occupies 25 closely-printed quarto pages, and contains, not only an exact account of its boundaries, population, resources, revenues, and divisions, but a full enumeration of all its useful fruits, trees, birds, beasts, and fishes, with such a minute description of their several habitudes and peculiarities as would make no contemptible figure in a modern work of Natural History.

* * * * *

The country and towns of Hindoostan are extremely ugly. All its towns and lands have an uniform look, its gardens have no walls, the greater part of it is a level plain. The banks of its rivers and streams, in consequence of the rushing of the torrents that descend during the rainy season, are worn deep into the channel, which makes it generally difficult and troublesome to cross them. In many places the plain is covered by a thorny brushwood to such a degree that the people of the Pergunnahs, relying on these forests, take shelter in them, and, trusting to their inaccessible situation, often continue in a state of revolt, refusing to pay their taxes. In Hindoostan, if you except the rivers, there is little running water.

* Bernier says under 6,000,000*l.*, Volume I., page 305, Khafi Khan says 24,000,000*l.*, and he is not likely to exaggerate, for he makes Shahjehan's revenue 23,000,000*l.* (only 1,000,000*l.* more than that now collected in the British portion of India), while it is generally reckoned to have been 32,000,000*l.*, and is admitted by Bernier when depreciating it to be greater than that of Persia and Turkey put together (Volume I., page 303.)

Page 343.—We come then, though a little reluctantly, to the conclusion, that there is a natural and inherent difference in the character and temperament of the European and Asiatic races, consisting perhaps chiefly in a superior capacity of patient and persevering thought in the former, and displaying itself for the most part in a more sober and robust understanding, and a more reasonable, principled, and inflexible morality. It is this which has led us, at once to temper our political institutions with prospective checks and suspicious provisions against abuses, and, in our different orders and degrees, to submit, without impatience, to those checks and restrictions; to extend our reasonings by repeated observation and experiment to larger and larger conclusions, and thus gradually to discover the paramount importance of discipline and unity of purpose in war, and of absolute security to person and property in all peaceful pursuits—the folly of all passionate and vindictive assertion of supposed rights and pretensions, and the certain recoil of long continued injustice on the heads of its authors—the substantial advantages of honesty and fair dealing over the most ingenious systems of trickery and fraud, and even—though this is the last and hardest as well as the most precious of all the lessons of reason and experience—that the toleration, even of religious errors, is not only prudent and merciful in itself and most becoming a fallible and erring being, but is the surest and speediest way to compose religious differences, and to extinguish that most formidable bigotry and those most pernicious errors which are fed and nourished by persecution. It is the want of this knowledge, or rather of the capacity for attaining it, that constitutes the palpable inferiority of the Eastern races; and, in spite of their fancy, ingenuity, and restless activity, condemns them, it would appear irretrievably, to vices and sufferings, from which nations, in a far ruder condition, are comparatively free. But we are wandering too far from the magnificent Baber and his commentators, and must now leave these vague and general speculations for the facts and details that lie before us.

APPENDIX No. 14.

SKETCH OF MOGUL ADMINISTRATION.—Elphinstone, Volume II., page 299.

The Empire was divided into 15 Subahs or Provinces. The chief officer in each was the viceroy (*Sipah salar*), who had the complete control, civil and military, subject to the instructions of the King.

Under him were the revenue functionaries above mentioned, and also the military commanders of districts (*Fauj-dars*), whose authority extended over the local soldiery or militia, and over all military establishments and lands assigned to military purposes, as well as over the regular troops within their jurisdiction, and whose duty it was to suppress all disorders that required force within the same limits.

Justice was administered by a Court composed of an officer named Miradil (Lord Justice and a Cazier. The latter conducted the trial and stated the law, the other passed judgment, and seems to have been the superior authority—the distinction probably arising from the modifications introduced by the will of the Prince and the customs of the country into the strict Mahomedan Law, of which the Cazier was the organ.

The Police of considerable towns was under an officer called the Kotwal; in smaller places it was under the Revenue Officer, and in villages of course under the internal authorities. The tone of instructions to all these functionaries is just and benevolent, though by no means exempt from the vagueness and puerility that is natural to Asiatic writings of this sort.

Those to the Kotwal keep up the prying and meddling character of the police under a despotism; they prohibit forestalling and regrating, &c., and, in the midst of some very sensible directions, there is an order that any one who drinks out of the cup of the common executioner shall lose his hand—a law worthy of Menu, and the more surprising as the spirit of all the rules for administering justice is liberal and humane. A letter of instructions to the Governor of Guzerat, preserved in a separate history of that province, restricts his punishments to putting in irons, whipping, and death; enjoining him to be sparing in capital punishments; and, unless in cases of dangerous sedition, to inflict none until he has sent the proceedings to Court and received the Emperor's confirmation. Capital punishment is not to be accompanied with mutilation or other cruelty.

APPENDIX No. 15.

PUNJAB REVENUE.—Burnes, Volume II., page 288.

The productions of the Punjab, together with the nature of its population, are favourable to its separate existence as a Government. The net revenue of the country amounts to about two and a half crores of Rupees per annum. Of this sum thirty-one lakhs are derived from Cashmere, exclusive of ten expended in its defence; but that province forms a kingdom of itself, and could yield double the amount. An individual who lately held Cashmere for three years, and paid his thirty-one lakhs regularly, was found to have carried upwards of thirty lakhs of Rupees out of the country in goods and money, the whole of which have been confiscated; but his successors in office, some Cashmere Pundits, are said to have rivalled in the following year this extensive peculator.

APPENDIX No. 16.

CHARACTER OF GOVERNMENT UNDER RUNJEET SINGH.—Burnes, Volume II., page 295.

With many defects, Runjeet Singh's Government is most vigorous and well consolidated for a Native State. The failings in it partake of the country and its customs, but its virtues (and it certainly has some) belong to a higher scale of civilization. The greatest blemish in the character of the ruler himself may be found in his universal distrust of those around him, but he only shares this quality in common with his countrymen. To such an extent is this feeling carried that none of the French Officers are ever entrusted with a gun, and the different gates of Attock and other important fortresses are confined to separate individuals, who command independent of one another. Cunning is the chief weapon in the politics of Runjeet Singh, and he uses it at all times. Little addicted to speaking truth, and less given to the performance than the making of promises, he yet rules with an unprecedented moderation for an Indian Prince. Few men, with such despotic power, have ever used it so mildly, and when we remember that he is without education, our estimate of his character must rise with the reflection that he never sheds the blood of his subjects, and even spares the lives (though not the persons) of those who have perpetrated the blackest deeds.

APPENDIX No. 17.

STATEMENT OF IMPERIAL ASSETS, INCOME, AND EXPENDITURE DURING THE MOGUL DYNASTY.

According to "Ferishta," the Imperial Assets at the time of Jellalooddeen Mahomed Akbar the Great were far greater than at any period of the Mogul dynasty. The following are the quotations, including a detail of elephants and horses, &c., which will be found interesting:—

"Tunka" coined "Elaie," value Rupees one hundred millions.

Rubies, "Khassgie," kept apart by the Emperor, weighing one maund.

Rubies and other precious stones, weighing ten maunds.

Gold uncoined, seventy maunds.

Silver, uncoined, one hundred and sixty maunds.

Copper Pice, fifty billions.

Elephants, above five thousand in number.

Horses, twelve thousand.

Deer, five thousand.

Leopards, more than nine hundred and less than one thousand.

Hawks, five hundred.

It would not be astonishing to observe that probably this statement has been exaggerated; but at all events nine crores of Rupees were insignificant before Akbar. It has been heard from some persons of trust and respectability that there were about ninety crores of hard cash and precious stones in the Imperial chests of Akbar the Great, and it has also been discovered from some of the royal expenditures described in the books, that in reality the Royal Treasury was full. It is also recorded in "Meerat Aftah Noomie" that the Emperor Akbar once filled upwards of nine crores of Rupees in a tank known as "Unoop Sagir," near Futtapore Seekree, and distributed it to the deserving and destitute.

Emperor Jehangeer, in his narrative, states that when he first got the Empire, he ascended the throne which his father had constructed for him. In addition to the three hundred maunds of gold and fifty maunds of amberggris spent on construction of the throne, two crores of gold-mohurs, each weighing five "miskals," or one tola ten mashes and one and a half ruttee, were expended in enamelling it with jewels; and he wore the crown of his father which had twelve adamants, valuing one lakh goldmohurs of five "miskals" each, on the corners, and was decorated with emeralds and pearls of four "miskals" each, to the value of one lakh goldmohurs and two hundred garnets, worth Rupees six thousand each.

It is mentioned in "Shahjehan Nama" that, from the commencement of the rule of Shahjehan to the date of writing the "Shahjehan Nama," nine crores and fifty lakhs of Rupees were expended in the reign of Shahjehan, of which one-half, or more than one-half, was expended in adventures and prizes. The price of the adamant (ilmas) weighing eight "miskals," which the mother of Ibrahim Loodee had presented to Babur Shah, was stated by the jewellers of the time to be all the world. Nine crores of Rupees were expended by the Emperor Shahjehan in decorating and constructing a peacock throne. It is also famous that there were two hidden treasures, known as "Jhoonra," and "Bhoora" at the time of Alumgeer, which were all consumed by Khan Jehan, one of the courtiers, in the Deccan war—*vide* the following verse which occurs in Mirza Jaffir *alias* Zeetallees' Pasquinade regarding Khan Jehan:—"That you have spent Jhoonra and Bhoora uselessly without doing any good." Again it is asserted in "Moozuffuree" that Nadir Shah carried away (as a booty) with him about forty crores of Rupees worth of property, ornaments, and jewellery from the Royal Treasury, city of Delhi, and State courtiers.

All these above narrations and expenditures tend to confirm the statement that the Imperial assets amounted to eighty or ninety crores of Rupees, of which eight crores of Rupees were set apart for State requirements, in the reign of Jehangeer, for the purpose of being made known to all. It is also alleged that the Emperor caused some buildings to be constructed for the reception of treasure, in which he buried his treasure and jewels, and got the masons and others acquainted with the circumstance annihilated, so that no one may find trace of it.

The resources and income of the country, as taken from "Ayeen Akbaree" and other Histories, appear to be as follows:—

The income derived from the produce of all the provinces amounted to nine billions six hundred and forty-eight millions five hundred and nine thousand four hundred and fifty "dams," which, according to calculation, would give two hundred and forty-one millions two hundred and five thousand and eleven Rupees and four annas. It is stated in "Mujmaool Salateen," that the total revenue of the twenty-two provinces of India, including Deccan, &c. (which latter the Emperor had specially reserved for his pocket expenses), amounted to ninety-six crores of Rupees. From this it can be surmised that Rs. 2,41,205,011-4 were on account of the actual revenue derived from the lands; the additional income was derived from the Deccan provinces, sayer taxes, fines, fees, percentages, &c., together with the maafee income from the tributaries of Jeypore, Jodhpore, Beekaneer, Hyderabad, Bungala, &c., which makes up a sum total of ninety-six crores of Rupees.

Of the ancient buildings some, which are out of question, were constructed by the former rulers, such as the Mahomedan Mosque and Minaret at Mehroolee, a second incomplete Minaret Iron "Keelee" of Rana Pirtheeraj *alias* Roy Peethora, with temple attached, and the buildings and minaret or the well-known "Kootubkee Lath," built by Feroze Shah, son of Salar Rujjub, which, up to this day, bears the holy inscriptions of the Kooran. But of the buildings erected from the time of Humayoon to that of Alumgeer, the construction of the fort of Shahjehanabad at Delhi (which surpassed all the other forts constructed during the period) was very costly. Some say Rupees fifty lakhs were expended, while others say one crore, viz., fifty lakhs in purchase of stone, lime, and bricks, &c., and fifty lakhs in defraying the wages and pay of masons, and awarding prizes, &c. Of all the architectural buildings constructed at the time, the most predominant one is "Taj Beebee ka Roaza," regarding the expenditure on which there are conflicting statements, some say Rs. 50,00,000, and some say Rs. 75,00,000. The other buildings constructed by Shahjehan and his ancestors thus occur in the Histories:—

	Rupees.
Ukbarabad Ford with other buildings, except Roazah Taj Beebee ka	- 6,000,000
Allahabad Fort, not including the cost of stone and materials	- 35,00,000
Musjid Jumah Delhi	- 10,00,000
Buildings constructed at Lahore at the time of Shahjehan	- 12,00,000
Ditto at Cabul	- 20,00,000
Ditto at Cashmere	- 20,00,000
Ditto at Hissar, Candahar, &c.	- 20,00,000
Ditto at Ajmere and Amedabad, Guzerat	- 12,00,000
A building over the Anasagur Tank	- 3,00,000
Tomb of Emperor Humayoon	- 15,00,000

NOTE.

RESTRICTIONS ON HINDOOS IN THE BHAWULPORE TERRITORY.

No Hindoo, during the rule of the Khans, was allowed to carry an umbrella.

When a Hindoo made water, he was not allowed to do so in the direction of Mecca; if he did so, he was fined.

The Hindoos of the State of Bhawulpore were not allowed to blow the *sankh* at the religious ceremonies.

In "Arnold's Dalhousie" there is an account of the Koh-i-Noor diamond, how it brought ruin on many of its owners. Page 191.

Officers who have served in Native States seem to have an idea, as expressed by Cunningham in his preface, page 9, that England should reign over Kings in India rather than rule over subjects.—*Cunningham's Sikhs*.

"Arnold's Dalhousie" contains some useful information on the change brought about in the Punjab by the British Government

Kaye's Administration of the Company may be read with profit.

Metcalf's Despatches.

Prinsep, giving various useful information during the period he was Secretary to Government.

On the defects of the English Government in India, Sir William Napier's works, whilst writing on the policy of his brother, Sir Charles Napier, may be read with very great profit. Lord Metcalfe's despatches are admirable; but at the present moment I am without a copy.

Forced labour is a great hardship on the subjects of Foreign States. The want of roads in Native States is a great hindrance to trade and travellers. Natives object to the general system of education which enables all classes to rise; they are in favour of class restrictions. They also think that our system of repressing crime is less efficacious than that pursued in Native States; that our Police are most oppressive, and lead to the punishment of many people unjustly; that petty crimes, forgery, false evidence, are fostered in our Courts. That English Courts punish rich and poor, high and low, without making any and fair allowances. The Hill rule, before the British conquered Simla and other Hill territories, are quoted to prove that truth and honesty flourished under a Native system more than under British rule.

From WILLIAM FORD, Esq., C.S.I., Agent to the Lieutenant Governor, Punjab, for the Affairs of Bhawalpore, to the SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.—(No. 201, dated August 20th 1867.)

I HAVE the honour, in continuation of my letter No. 195, dated 9th August 1867, to forward a confidential report from Captain Minchin, Superintendent of Bhawalpore. It will form, as it were, a conclusion to the report already submitted by me. It describes the actual condition of a Native State.

From CAPTAIN C. MINCHIN, Political Superintendent of Bhawalpore, to the Agent to the LIEUTENANT GOVERNOR for the Affairs of Bhawalpore.—(Dated July 31st 1867.)

WITH reference to the Under Secretary to the Government of India's confidential letter of the 1st July last, calling for a statement on the subject whether the masses of the people are more prosperous and happy (*sua si bona norint*) in British territory than under Native rulers, I have the honour to submit the following report on the Bhawalpore State for incorporation with your own report to Government.

Inhabitants of Bhawalpore are Daoodputras, Juts, and Hindoos.

Juts are the descendants of original owners of the country.

2. The inhabitants of the Bhawalpore State may be divided into three classes, *viz.*, Daoodputras, Juts, and Hindoos.

The Juts are the descendants of the original owners of the country prior to its seizure by Daoodputras.

The Daoodputras are clearly of Arabian extraction, whence they emigrated to Sinde, and were divided into two large tribes, the Kuloras and Daoodputras. The former proving the stronger after bloody struggle, the Daoodputras were again obliged to move and settle on the strip of country now known as Bhawalpore which was so named from Bhawal Khan the 1st, who assumed the title of Nawab and sovereignty of the State.

Daoodputras of Arabian origin that settled in Sinde.

Were ejected by Kuloras. Settled in what is now known as Bhawalpore.

Prior to this the tribe was governed by the headmen of the several sections, of whom the head of the Peer Janees was regarded as the principal Mookuddum, or chief.

Account of Bhawal Khan the 1st. Bhawal Khan the 1st was a very enterprising, ambitious man; and raising an army of mercenaries, he gradually brought the whole State into subjection. His descendants followed the same policy. No Daoodputras were allowed to hold any offices in the State, or were employed in the army, but their lands were held on exceptionally light leases on condition of feudal service.

3. Bhawal Khan the 3rd was the best of his race, and his rule is always referred to as the period in which this State was in the height of its prosperity, although shorn of its proportion by the annexation of the Trans-Sutlej portions by Maharajah Runjeet Sing; and he is always spoken of now as Bhawal Khan Salis bil Khair. My remark will be chiefly confined to a description of the State under his rule.

Account of Bhawal Khan the 3rd, called Bhawal Khan Salis bil Khair.

4. Bhawal Khan the 3rd looked after everything himself, and, where his own interests were concerned, was above being influenced by under-hand means. A story is told of him, that a certain Kardar who served him faithfully was in consequence very obnoxious to the Mohars, a family of Syuds in the Bhawalgurh Kardarship, who tried to get him removed without effect, and at last induced the Shajadah Nusheen of Tawsa, their Peer, to use his influence, when the Nawab plainly told him to mind his own business and not interfere in affairs of State. By good management and living well within his income he accumulated a large treasure, which, however, was soon dissipated by his successor. He kept the Daoodputras well under control; his openly-expressed opinion being that all they required was a horse and a gun, and anything beyond that only turned their heads and made them rebellious.

5. The Nawab maintained a force consisting of four Regiments of Infantry, one of Artillery, and a sort of Body-guard known as the Bargeers, mounted on horses belonging to and kept by the Nawab. The troops received rations and a small pay in addition. These rations were distributed through an establishment known as the Modikhana, which also supplied rations to the principal Officers of the State and Palace Attendants. It was never well managed, and led to great abuses, especially under the late Nawabs Futteh Khan and Bhawul Khan the 4th, when the number of persons receiving rations was largely increased. The Kardars were obliged to furnish the grain from the State granaries, and with a little arrangement this could have been easily done. But a custom prevailed of holding an audit of accounts on the Salgirab, about the end of June or beginning of July, on the "Akri Char Shumba," when the rubbee crops could not possibly have been collected; and as each Kardar was obliged to present a large nuzzer in cash as a portion of the proceeds of his collections, they were obliged to forestall the harvests and sell their grain below the value; then, when they were called on to supply grain, they could only do so by buying it again at a loss, which re-acted on the people by raising the price of grain to almost famine rates. A very high import duty on grain, called so long one-sixteenth of value, prevented importation of grain from British territory; and so equalizing the markets. When the Kardars failed to supply the grain they were kept prisoners at Ahmedpore until the deficiency was made good, which could only be done by their Naibs using the most oppressive measures to obtain the required quantity of grain, until at last it became the common talk of the country that the Modikhana had eaten up the State.

6. The maintenance of Bargeers led to another abuse, which was quite as bad under Bhawul Khan Salis bil Khair as any of his successors. Each Bargeer was allowed two horses—one for riding and the other was out at grass, but really fed and maintained by the Zemindars, as the Churwadars, that is horse-keepers, would threaten to cut down the finest crops in the country unless paid to abstain from doing so. The Kardars dared not interfere, and the horse-keepers lived at free quarters. The Nawab, however, paid largely for the keep of these horses, which were supposed to be fed on atta, goor, and ghee, which, it is needless to say, were the perquisites of the horse-keepers, while the horses were fed by the Zemindars.

7. Bhawul Khan the 3rd was passionately fond of shooting, particularly black buck and ravine deer, and for this sport had large enclosures called "sirgh," made up, miles of strong hedges converging to a point forming a run through which the deer were driven. To make up these hedges and keep them in good order, he maintained a large establishment of carts and bullocks. There are now some 500 pairs of bullocks belonging to the Nawab, which is much less than there used to be. These cattle had rations allowed for them, but, as in the case of the horse-keepers, the cartmen considered it as their perquisite, while the cattle were fed by the Zemindars, on whom they had a much greater hold than the horse-keepers, as the Nawab, having a right to a certain portion of kurbee, *i.e.*, jowar grass, on most of the estates, transferred this right to the cartmen, who paid into the State Treasury a nuzzurana amounting to nearly 1,000 Ahmedporee Rupees per annum. The jowar grass is much valued by the Zemindars, as it is the only grass they can procure in seasons of drought to keep their cattle alive; and it may be easily imagined how the cartmen used their power.

Hundreds of Zemindars deserted their lands and settled in the Dera Ghazee Khan, Moozuffergurb, and Mooltan districts. From what I can learn, the exactions of the cartmen were most felt by the people, although the tyranny of horse-keepers and mismanagement of the Modikhana largely contributed to the disorganization of the State.

8. There was also another establishment which gave great offence, but chiefly to the better class of Zemindars and the Revenue Officials; this was the "Kunjkee" Establishment, a sort of running footmen attached to the Nawab's cart, who accompanied him wherever he went, armed with small axes and a peculiar rod or wand of office; their duty was to clear away all obstructions on the road, to seize the arms of persons shooting in the desert or State preserves, and confiscate their property.

9. With the exception of the Daoodputras, who hold their lands on light kussoor

Description of buttai system.

rates, the Government share of the produce is taken by buttai, unless the estate has been granted on an istumrari tenure. The State, therefore, is obliged to guard the standing crops to prevent embezzlement. This duty is performed by a body of men called Moohussils, who pay a nuzzurana for performing this duty, and are allowed to receive from the Zemindars a certain share of grain. They are overlooked by persons called Chungoos, a sort of spy, also paid by the Zemindars. To each village one or two Mirdahs are appointed as overseers. As soon as the crops are cut and thrashed at each thrashing floor they are divided into two heaps of unequal size; the larger heap is first divided according to the village rate, either one-fifth or two-fifths, as the case may be, dependent on whether the estate is irrigated by wells, canals, or river inundation, but varying in each village. No Mulba accounts are kept, but all the village servants, Dhurwaees, Moohussils, Kombhars, Kootanahs, are paid from the small heap, as also Takeers, and persons obtaining grants from the State. The State now, as formerly the Nawba's, is entitled to specific shares as follows:—

Choongee,	3	puropees per manne of 15 maunds,	
Lawer,	3	ditto	ditto
Machee,	2	ditto	ditto
Moohussillana,	1	topa ditto	ditto
Dhurrut	1	ditto	ditto
Gareeba	6	puropees ditto	ditto

besides zubtee shares, that is, lapses occasioned by the death of proprietors without heirs. The Dhurwaees, as well as Moohussils, pay nuzzurs for performing their duties, and their share is paid by the Zemindars, and is quite separate from the sewi items above entered. After these deductions have been made, any grain remaining over is divided, as before, between the proprietor and the State. The local customs have been adhered to, and having several times assisted in this distribution, the above may be accepted as a general account of the manner in which the buttai is effected. I enclose a copy of Wasil Baki accounts of the Hasilpoor Pergunnah for the last khureef,

See Appendix No. I.

which exhibits the actual collections thus made.

10. The position of a Zemindar under the Bhawulpore régime was dependent in

Position of Zemindars under the Bhawulpore régime.

some measure on his relationship to some party at Court, however humble, or to his residing at a long distance from the Court. In either case he was often able to obtain exemption from the general tyranny exercised by the cart-men and horse-keepers. Certain classes, as the Daoodputras, were exempt from this treatment, and held their lands on light leases, but they were prevented from obtaining any position of power or influence, were prohibited from hunting, discouraged from improving their estates, lived chiefly on their kussoor grants which were paid in money or kind, and were liable to have their wives taken from them at any time if passably good-looking. The Zemindars in this neighbourhood, with a few exceptions, are the most miserable, spiritless people I have seen; they catch eagerly at every rumour and misinterpret it in the most incredible manner. The report of a Civil Surgeon having been sanctioned for Bhawulpore put them in the most dreadful fright, and by one impulse, as it were, nearly every male child in the State who had not undergone the operation was at once circumcised. Exaggerated stories about the precautions taken at Mooltan to prevent the spread of cholera and the tales of the Emam Mehndi were blended together to account for the alarm. I have endeavoured to get up weekly meetings in a garden near my house to get acquainted familiarly with the people. Those who have broken the ice gladly come again, but it is very difficult to bring in others. Zemindars summoned in criminal cases attend with fear and trembling, and it will be some time before they obtain the manly independence which is the striking characteristic of the Zemindars in the frontier districts. I attach a list of

See Appendix No. II.

more than 300 men living in the Bhawulpore neighbourhood who have left it in consequence of the treatment they received during the last 14 years. A similar list might be made out for each Kardarship in the State. They are now beginning to return, and I trust a happy day is yet in store for the Zemindars of this State. The exactions of the cart-men and horse-keepers have been stopped. The Modikhana is worked so efficiently that its operation is scarcely perceived, and it is only the customs which now presses on them. They are so accustomed to the buttai that they hardly perceive its hardship,

and dread the idea of a money settlement. Large numbers of Sikhs and Bagrees are entering the State to get leases of land on money assessment, a report of which I hope to submit with this.

11. As far as I can learn, the Hindoos are well treated; in fact they are too important a portion of the community to be treated otherwise. They were obliged to purchase the Nawab's share of produce at a little above the current price of grain, and also to furnish Zemindars with seed grain; but though this is an interference with the liberty of the subject, they never lost by such transactions. They had occasionally to give forced loans and to contribute to the expenses of State ceremonials, but this was never regarded as a grievance. The richer classes always obtained exemption from local cesses, and were able to manage the Zukat officials so as to avoid payment of a portion of the heavy customs dues. This I find has largely contributed to the unpopularity of the present customs management, as, although the dues are reduced, they are not able to avoid payment, and consider the department more severe than it used to be. Religious bigotry prompted the governing class to encourage butchers to kill bullocks in the most objectionable places for the Hindoos close to their Dhurmsallas! A few men were forcibly circumcised, but no other interference was made with their religion.

12. In private the Nawabs indulged in the grossest licentiousness; they kept a number of women in the harems as procuresses, whose business it was to look out for women, and any good-looking women were at once seized and married by the Nawab, whether they had previously been married or not. I understand that the first husbands of a great number of the Begums in Dillawur are still alive. These Daies obtained great influence over the Nawabs, and one known as the Sooltanee Daie was consulted by the late Nawab on every subject. Her influence was eagerly sought after, so that she amassed large wealth. These Nawabs have a race of hereditary servants, called "Khash Khellies," who are required to allow the Nawab the first embraces of their daughters before they are married to other persons, what Beaumont and Fletcher called the "custom of the country." Bhawul Khan the 3rd was no exception, and though he lived to an old age comparatively, his excesses shortened his life, and for some years before his death he was subject to fits of monomania, which made him hate the sight of men and forced him to live in the deserts. A vein of insanity ran through the family, no doubt a consequence of their excesses.

13. The principal officers of the State were generally foreigners, residents of Mooltan, and, having no stake in the country, had but one object, to make their fortunes. The consequence was, that generally their tyranny became so oppressive that they were either obliged to fly, or paid the forfeit of their lives. A pension list is attached to the Customs department, containing amongst others, a long list of women whose husbands had been Wuzeers and killed by order of the Nawab, their lands confiscated, and a small pension given to the widows and daughters.

14. While on this subject it may be interesting to give a list of the Wuzeers employed during the last 40 years and their fate. In 1819, on the death of Nawab Sadik Mahomed Khan, one Sheik Mukbooll was Wuzeer. His wish was that Azeem Yar Khan should be made Nawab; but by the assistance of one Yakoob Mahomed, Khash Khelli, and certain Daoodputras, Bhawul Khan the 3rd was appointed, who at once made Yakoob Mahomed Wuzeer and murdered Sheik Mukbooll. Yakoob Mahomed was Wuzeer for ten years, when getting too powerful and the Nawab wishing to get hold of his wife, sent him a dose of poison, but that not acting speedily enough, his throat was cut, and his wife and two daughters taken into the harem. This was about 1829. Moolla Jewun was appointed Wuzeer, and remained in this position throughout Bhawul Khan the 3rd's reign. On his death he nominated Sadut Yar Khan to succeed him, who appointed one Chawkees Rae as his Wuzeer. Within four months, however, Futteh Khan, by the assistance of Akhil Mahomed and the Daoodputras, became Nawab, and his first act was to murder Chawkees Rae and confiscate his property. Fukeer Surajooddeen was then made Wuzeer, but within eight months was murdered by order of the Nawab. Jemadar Ahmed Khan was then made Wuzeer. On Nawab Futteh Khan's death his son, Bhawul Khan

Account of the Kusoor under the Bhawulpore régime.

Private life of the Nawabs.

Principal Officers of State were foreigners.

Pension list of widows whose husbands had been Wuzeers and whose estates had been confiscated.

The Wuzeers employed during the last 40 years and their fate.

the 4th, succeeded him, by whose orders Ahmed Khan was murdered in 1862; since then Dewan Megraj, Mahomed Hussun, Nusseerooddeen, and Nizam Khan became the principal Officers of the State under the title of Meer Moonshee. With the exception of the last four Officers and Moolla Jewun, who died a natural death, though his property was confiscated subsequently, every Wuzeer was murdered. Mahomed Hussun had to escape to save his life, and Nusseerooddeen was in prison when the late Nawab died.

15. With regard to the condition of Zemindars under British rule, the best proof of their material prosperity is shown in the increase of cultivation, the necessity of excavating new canals to give an opening to the redundant population, who can no longer be supported on the paternal acres, the capital embarked by the Zemindars themselves on agricultural projects, sinking new wells, opening new canals, &c., the enhanced value of land, and lastly, the readiness with which the wilder tribes on the border especially adapt themselves to the decisions of our Courts. My own experience is chiefly confined to the frontier districts of Bunnoo, Dera Ismael Khan, and Dera Ghazee Khan, but I doubt if anywhere in India there is a more contented population than in these districts.

16. Along the whole border the people residing in the adjoining hills are particularly anxious to obtain settlement in the plains; the great difficulty is the want of water. In Bunnoo the settlement of the Wuzerees on the Tull has transformed the most turbulent district on the frontier into one of the quietest. The state of this frontier was most admirably described by Sir H. Edwardes in his *Year in the Punjab*.

The Wuzerees then merely grazed their cattle on the Tull: during the last 18 years they have settled down as cultivators; they have a light settlement, and have consequently saved a good deal of money; and those who, prior to British rule, had scarcely seen money, are now very wealthy. A case which occurred in my Court will clearly show the change that

has taken place in consequence. A young Mullick ran off with the destined bride of another man. The father and intended husband gave me a petition on the subject, which was referred to a Jirgah of the tribe, who decided that the offender should pay Rs. 1,000 as compensation to the father of the woman and a wife to the injured intended. The money was paid into Court; but when the parties came up for final adjudication, the father said that if he took the money there would always be a bad feeling between his son-in-law and himself; that a happy home is better than money. He therefore forgave his daughter and her lover, and took upon himself all arrangements to pacify the man to whom she was betrothed, and thus made the most satisfactory termination of a case of this kind that ever came before me.

17. On the subject of capital embarked in agricultural projects, I cannot do better than attach an extract* of a report on the Dera Ghazee Khan district, which I prepared on leaving the district, but which from press of work I have never been able to submit, though I left a rough copy of it in the office for the use of my successor. From this it will be seen that a sum amounting to Rs. 1,58,000 was expended by the principal

Zemindars of that district within four years on agricultural works. The greater portion was of course paid by the Belooch Chiefs, Jumal Khan Lughari, Emam Bux Khan Muzari, and Musoo Khan Nootkani, than whom more liberal-minded, enterprising men I have never met. Their position is solely due to being under the British

Government, as previously they were simply robber Chiefs, hiding in the hills or morasses by the river bank, and if caught by the Sikhs would have been burnt alive with their followers. Shortly before annexation Jerral Khan Lughari, a far-seeing man, made friends with the Sikhs and so bettered his position; they are now looked upon as the head of their tribes, and all arrangements connected with the tribe are made through them. They have been invested with honorary judicial powers, and hold as enviable a position as any man could hope to obtain under the British rule. There is only one subject on which they all complain, and that is the law regarding adultery. Under British rule this offence has quadrupled. The women believe themselves to be above the law, and it is only the fear of being murdered that keeps them at all in order.

Condition of Zeemindars under the British Rule.

People residing in the adjoining hills anxious to obtain settlement in the plains.

Settlement of Wuzerees in Bunnoo District.

A case of Abduction.

Capital embarked on agricultural projects in Dera Ghazee Khan District.

*See Appendix No. III.

The sum of Rs. 1,58,000 expended by principal Zemindars.

Greater portion paid by Belooch Chiefs.

18. With regard to the redundant population of the Punjab, the following may be considered as a significant fact. There is a tract of waste land in the Bhawulgurh Kardarship of this State which has hitherto been left to cattle graziers, and is estimated to contain about 100,000 acres: it is entirely dependent on rainfall for even drinking water, but the Nazim of Bhawulpore has received upwards of 15,000 applications for grants of this land from parties residing in Ferozepore, Sirsa, Loodiana, and even Jullundur, who all state that they are obliged to look out for new lands to settle on, as their paternal estates can no longer support them, and there is no available land left in their own districts. Both at Bunnoo and in the Dera Ghazee Khan district lands in favourable localities, situated near large towns, or exceptionally favoured with water for agriculture, sell as high as Rs. 200 an acre, which, I understand, is much higher than the best land in the Jullundur Doab fetches; and the high price paid for the lands taken up for the new fort at Mooltan is another case in point.

19. In conclusion I beg to submit a translation of a memorandum on this interesting subject prepared by Assistant Superintendent Moorad Shah, in which he tersely describes the advantages of British rule as compared with Native Governments, and in the truth of which I fully coincide. It expresses his own feelings on the subject without any attempt at adulation, and may be regarded as genuine. I have drawn out this report in a press of business, and therefore many inaccuracies may occur, and I shall therefore be greatly obliged if you will excuse such portions you may consider inappropriate or foreign to the subject.

Redundant population of the Punjab.
Applications for land on the Bhawulgurh Kardarship.
See Appendix No. IV.

APPENDIX I.

I.—STATEMENT showing the Division of State Share in Kind of the Hasilpore Paishkaree on the Tehsil of Khypore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Lumberdar.	Name of Well, Jhallar, or Sylaba.	Name of Owner, Parentage, Caste, and Residence.	Names of Kussoor Khara.	Names of Cultivators.	Date on which the Shares were divided.	Rate of dividing the State Shares.	What sort of Grain.	Total Quantity of the Produce of the Well.	Deduction on account of Owner's Share.	Quantity of State Share.
										M. P. T. P. 173 7 1 1½	M. P. T. P. 121 35 1 1	M. P. T. P. 51 22 0 0½

(continued)

MISCELLANEOUS REVENUE.													
Choongee on the whole Produce of the Well, at 3 Puropees per Maanee.	Lawer at 3 Puropees per Maanee.	Machee at 2 Puropees per Maanee.	Abiana One-fourth Part from Kussoor Khars' Share.	Gundkhar.	One-fifteenth Part from the Kussoor Khar's Rights.	Moohussillee Fees on the whole at 4 Puropees per Maanee.	Dhurrut Fees on the whole at 4 Puropees per Maanee.	Zubtee of Maroof Khan's Share.	Gadeelhans' Fees at 6 Puropees per Maanee.	Total.	Total of proper and Miscellaneous Revenue.	Paid to Kussoor Khars from the State Share at different Rates.	Balance of the State Share in Store.
M. P. T. P. 0 35 2 1	M. P. T. P. 0 29 0 0	M. P. T. P. 0 3 1 2½	M. P. T. P. 0 11 2 2¼	M. P. T. P. 0 24 2 30	M. P. T. P. 0 7 2 0	M. P. T. P. 0 0 2 0	M. P. T. P. 0 2 0 0½	M. P. T. P. 0 3 0 0½	M. P. T. P. 0 21 1 2¼	M. P. T. P. 1 2 40 1	M. P. T. P. 54 12 1 1½	M. P. T. P. 9 29 3 0¼	M. P. T. P. 44 32 2 1

REMARKS.—This shows the actual collections by buttai, including the miscellaneous items. See paragraph of report in manees, that is, bajra and jowar crops.

II.—STATEMENT showing the Division of State Share in Kind in Maunds of the Hasilpore Paishkaree in the Tehsil of Khypore for the Khureef Harvest, commencing from the 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Lumberdar.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Names of Kussoor Khars.	Name of Cultivator.	Date on which the Shares were divided.	Rate of Buttai.	What sort of Grain.	Total Quantity of the Produce of the Well.	Share of the Owner.	State Share.
										M. S. C. 163 16 13	M. S. C. 123 0 13½	M. S. C. 40 15 15½

(continued)

MISCELLANEOUS REVENUE.										
Khurch on the whole Produce at 1½ Seer per Maund.	Daurrut at 4 Chittacks per Maund.	Machee at different Rates.	Moohussillee at 4 Chittacks per Maund.	Zubtee of Maroof Khan's Share.	One-fifteenth of Kussoor's Share.	Choongee on the whole Produce at 3 Chittacks per Maund.	Total.	Total of Proper and Miscellaneous Revenue.	Paid to Kussoor Khars from the State Share at different Rates.	Balance of the State Share in Store.
M. S. C. 4 2 13	M. S. C. 0 6 5¼	M. S. C. 0 2 6	M. S. C. 0 1 0	M. S. C. 0 2 7	M. S. C. 0 6 0	M. S. C. 0 2 0	M. S. C. 4 22 15¼	M. S. C. S. 44 38 14¾	M. S. C. 5 27 9	M. S. C. 39 11 5¾

REMARKS.—This is the actual collections in maunds, that is, on indigo and cotton.

III.—STATEMENT showing the Jummabundee of Dunkhars of the Paishkaree of Hasilpore in the Tehsil of Khypore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Well, Jhallur, or Sylaba.	Name of Owner, Parentage, Caste, and Residence.	Name of Cultivator.	Name of Dunggozar.	Number of Khusrab, Palmaish.	What sort of Grain.	Deductions from Area of Land.			Rate of Government Tax per Beegah.		Revenue proper.	
								Dunggozar's Right of 1 Biswah per Beegah.	Kusoor Khur's Right.	Total.	Cash.	Kind.	In Cash.	In Kind.
								R. B. 33 11½	R. B. 46 4½	R. B. 79 16			R. A. P. 140 2 6	M. P. T. P. 21 8 3 1
								R. B. 901 12½						

(continued.)

MISCELLANEOUS REVENUE.																					
In Cash.				In Kind.				Total of proper and miscellaneous Revenue.		Paid to Cultivator for cultivating Land.		Remaining in hand.		Add One-fourth to change the Account into Ahmedpore.		Total of Government Share.					
Killochumba Fees.		Chongree at 6 Purpoes per Mance.		Kardaree Fees.	Zubtee Fees.	Huftdubee Fees.	Izafa Bhandra at 2 pies per Mance.	Beekh.		Total.	Cash.		Kind.		Cash.		Kind.		Cash.	Kind.	
R. A. P. M. P. T. P.	28 7 60 10 7 3½	R. P. M. P. T. P.	1 8 1 20 35 1 31 24 2 20 48 0 10 19 2 04 46 1 3½	R. P. M. P. T. P.	1 8 1 20 35 1 31 24 2 20 48 0 10 19 2 04 46 1 3½	R. P. M. P. T. P.	1 8 1 20 35 1 31 24 2 20 48 0 10 19 2 04 46 1 3½	R. P. M. P. T. P.	1 8 1 20 35 1 31 24 2 20 48 0 10 19 2 04 46 1 3½	R. P. M. P. T. P.	1 8 1 20 35 1 31 24 2 20 48 0 10 19 2 04 46 1 3½	R. A. P. M. P. T. P.	168 10 0 26 5 1 0¼	R. A. P. M. P. T. P.	9 13 0 1 21 1 0	R. A. P. M. P. T. P.	138 12 3 24 34 0 0¼	R. A. P. M. P. T. P.	40 13 9 6 8 2 0	R. A. P. M. P. T. P.	199 10 0 30 42 2 6¼

REMARKS.—The Dunkhars are the descendants of the original proprietors of the soil prior to Dadputra invasion, who pay a fixed rate in cash and kind on the cultivated area of their estates, which is measured.

—STATEMENT showing the Collections of Dun from the Kusoor Khars of the Paishkaree Hasilpore in the Kardaree Khypore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Alphabetical Number.	Name of Village.	Name of Well, Jhallur, or Sylaba.	Name of Owner, Parentage, Caste, and Residence.	Name of Dunggozar Parentage, Caste, and Residence.	What sort of Grain.	Area of Land.	Rate of Dun and Miscellaneous Revenue.		Government Share due.		Realized.		Remaining due.		Surplus Amount.	
								Cash.	Kind.	Cash.	Kind.	Cash.	Kind.	Cash.	Kind.	Cash.	Kind.
							R. B. 821 16½	R. A. P. M. P. T. P. 199 10 030 42 2 0¼	R. A. P. M. P. T. P. 180 3 929 47 1 3	R. A. P. M. P. T. P. 199 10 030 42 2 0¼	R. A. P. M. P. T. P. 180 3 929 47 1 3	R. A. P. M. P. T. P. 199 10 030 42 2 0¼	R. A. P. M. P. T. P. 180 3 929 47 1 3	R. A. P. M. P. T. P. 199 10 030 42 2 0¼	R. A. P. M. P. T. P. 180 3 929 47 1 3	R. A. P. M. P. T. P. 199 10 030 42 2 0¼	R. A. P. M. P. T. P. 180 3 929 47 1 3

VIII.—STATEMENT (Wasil-bakee Nugd) showing the Collections and Balances in Cash of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest.

Number.	Name of Village.	Name of Lumberdar.	Name of Proprietor.	Government Dues.	Amount realized.	Balance.	Surplus Amount.
				RS. A. P. 475 6 3	RS. A. P. 456 4 3	RS. A. P. 19 2 0	

REMARKS.—This is the Statement of Collections, as shown in Statements Nos. VI. and VII.

IX.—STATEMENT (Nuksha Towzee) of Istumraee Wells of Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Alpha- betical Number.	Name of Village, with Number of Lumberdar Register of Boundaries.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Annual Jumma or Government Dues in Ahmedpore Rupees.			Amount due to State.			Amount realized.				Balance due to the State.	Surplus Amount received erroneously
					Khureef.	Rubbee.	Total.	Balance of the last Harvest.	Present Harvest.	Total.	Surplus Amount received at the last Harvest.	Received in the present Harvest.	Total.	Amount realized on account of Kists.		
								RS. A. P. 1,588 13 3	RS. A. P. 1,588 13 3		RS. A. P. 1,489 0 0	RS. A. P. 1,489 0 0	RS. A. P. 99 13 3			

REMARKS.—This Statement shows the demand on wells granted on istumraee tenure, *i. e.*, a fixed lease.

X.—STATEMENT (Nuksha Towzee Tuhreeb) of the Wells of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest.

Number.	Towzee No.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Amount due to the State.	Amount realized.	Balance remaining due.
					RS. A. P. 42 9 3	RS. A. P. 41 15 3	RS. A. P. 0 10 0

REMARKS.—This is an extra cess on istumraee tenures for cost of writing, averaging 10 annas per well.

XI.—STATEMENT (Nuksha Jureeb) of the Wells of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest.

Number.	Towzee No.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Amount due to the State.	Amount realized.	Balance remaining due.
					RS. A. P. 520 7 3	RS. A. P. 496 9 0	RS. A. P. 24 14 3

REMARKS.—A cess on certain istumraee tenures, varying for Rs. 1 to Rs. 5, to cover the cost of measurements.

XII.—STATEMENT (Nuksha Towzee Towfeer Mamoda) of the Wells of the Hasilpore Paishkaree in the Kardaree Khypore for the Khureef Harvest.

Number.	Towzee No.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Amount due to the State.	Amount realized.	Balance remaining due.
					RS. A. P. 172 14 9	RS. A. P. 172 14 9	

REMARKS.—A fixed demand assessed on certain istumraree wells in lieu of the State demand; an extra cultivation as in Statement No. VI. These wells are consequently not measured.

XIII.—STATEMENT (Nuksha Towzee Abiana) of the Istumraree Wells of the Hasilpore Paishkaree in the Kardaree Khypore for the Khureef Harvest.

Number.	Towzee No.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Amount due to the State.	Amount realized.	Balance remaining due.
					RS. A. P. 222 8 6	RS. A. P. 214 15 9	RS. A. P. 7 8 9

REMARKS.—A fixed demand on certain istumraree tenures if they take canal water.

XIV.—STATEMENT (Nuksha Towzee Beek Mookhuslee) of the Wells of the Hasilpore Paishkaree in the Kardaree Khypore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Well.	Towzee No.	Name of Lumberdar.	Name of Owner, Parentage, Caste, and Residence.	AMOUNT OF BEEK MOOKHUSLEE ON JOWAR.												Quantity of Grain realized.	Remaining due.						
						Quantity in Bhawal-pore Current Weight.				Increase according to Ahmedpore Weight.				Total.											
						M.	P.	T.	P.	M.	P.	T.	P.	M.	P.	T.	P.								
						0	27	0	2	0	6	3	2	0	34	1	2	0	30	2	2	0	3	3	0

REMARKS.—A cess given originally in charity to one of the watchers, from whom it was confiscated, and henceforward included as a portion of the State demand.

XV.—STATEMENT (Nuksha Nugdee Mamodah) of the Villages of the Hasilpore Paishkaree in the Kardaree Khypore for the Khureef Harvest.

Number.	Name of Village.	Name of Malgoozar.	Half-yearly State Share.	Amount realized.	Amount remaining due.
			RS. A. P. 75 6 9	RS. A. P. 47 7 9	RS. A. P. 27 15 0

REMARKS.—A fixed demand in cash in addition to the State share of the produce.

XVI.—STATEMENT (Nuksha Towzee Ijara Dhurrut) of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef.

Number.	Name of Village.	Name of Contractor, Parentage, Caste, and Residence.	Annual Jumma. R. A. P. 138 1 0	AMOUNT OF DHURRUT CASES.						Amount realized.	Remaining due. R. A. P. 138 1 0
				In Bhawulporee Rupees.		Increase according to Ahmedporee Rupees.		Total.			
				R.	A. P.	R.	A. P.	R.	A. P.		
				110	1 0	28	1 0	138	1 0		

REMARKS.—This is the amount paid by two Dhurwalis for permission to perform their duties; they receive a share of the produce from the Zemindars.

XVII.—STATEMENT (Nuksha Towzee Nuzzurana Enam) of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	AMOUNT OF NUZZURANA.			AMOUNT REALIZED.			REMAINING DUE.	
				Cash.	Kind.		Cash.	Kind.		Cash.	Kind.
				R. A. P.	M. P. T. P.		R. A. P.			R. A. P.	M. P. T. P.
				3 12 6	0 1 3 2		2 8 3			1 4 3	0 1 3 2

REMARKS.—Statement of Nuzzurana paid by parties who hold estates in Enam.

XVIII.—STATEMENT (Nuksha Nuzzurana Tuhree Putta) of the Hasilpore Paishkaree in the Kardaree Khyrpore for the Khureef Harvest, commencing from 1st October 1866 to 31st March 1867.

Number.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste, and Residence.	Amount of Putta Fees.		Realized.	Remaining due.
				R.	A. P.		
				R.	A. P.		R. A. P.
				10	0 9		10 0 9

REMARKS.—A fee levied on writing puttas for Istumraee or Enam tenures.

XIX.—STATEMENT (Nuksha Khusrah Paimash) of the Paishkaree Hasilpore in the Kardaree Khyrpore for the Khureef Harvest.

Number.	Name of Village.	Name of Well.	Name of Owner, Parentage, Caste.	Name of Cultivator, Parentage, &c.	East and West Average.	South and North Average.	Area of Land.	Deductions on account of Waste Land.	Remaining to be Assessed.	Description of Land.	What sort of Grain.
							R. B.		R. B.		
							168 11		168 11		

APPENDIX II.

STATEMENT of Persons migrated from the Bhawalpore State.

Number.	Name.	Occupation.	Localities.		Date.
			From	To	
1	Mahomed	Weaver	Bhawalpore	Patt Puttun	15th Aug. 1864
	Azeem	"	"	Mooltan	11th Feb. 1861
	Golamoo	"	"	"	15th March 1866
	Kewul Mull	Shopkeeper	"	"	17th April 1865
5	Alla Bux	Goldsmith	"	"	7th Oct. 1865
	Abdool Kurreem	Nukad	"	"	9th Sept. 1864
	Kalla	Blacksmith	"	"	10th Oct. 1860
	Nwosa	Carpenter	"	"	11th March 1852
	Golam Mahomed	Blacksmith	"	"	13th Nov. 1857
10	Tugga	"	"	"	20th Sept. 1861
	Talloa	Shopkeeper	"	"	17th Dec. 1857
	Jetha	"	"	"	21st Jan. 1861
	Himta	"	"	"	2nd March 1863
	Mukna Mull	"	"	"	21st Jan. 1867
15	Beroo Mull	"	"	"	23rd Sept. 1863
	Goolaba and Loor- enda.	Potters	"	"	4th Nov. 1863
	Ghunnoo	"	"	"	8th " 1862
	Issur	"	"	"	11th Dec. 1864
	Assoo Mull	Shopkeeper	"	"	17th Feb. 1862
20	Mohundoss	"	"	Adamwaha	19th Jan. 1855
	Boodhoo	"	"	Mooltan	17th April 1850
	Dhumma Mull	"	"	"	19th Oct. 1854
	Toolsa	"	"	"	24th July 1859
	Remull	"	"	"	27th June 1858
25	Khewa	"	"	Adamwaha	24th May 1857
	Hyat	Dyer	"	Mooltan	27th July 1862
	Assa Mull	Shopkeeper	"	Lodhran	29th March 1864
	Jumnoo Mull	"	"	Mooltan	17th Dec. 1862
	Pulla	Painter	"	"	20th Jan. 1861
30	Roshun	Goldsmith	"	"	21st Oct. 1861
	Korra	Dyer	"	"	28th March 1861
	Tossun	Shopkeeper	"	"	27th Feb. 1863
	Seetul Mull and Ranoo	Dullal	"	Kot Nijabut	29th " 1855
	Ramoo	Shopkeeper	"	Mooltan	11th Dec. 1855
35	Dhuna Mull	"	"	Shoojabad	9th July 1857
	Milkain	"	"	Mooltan	17th March 1861
	Ruheem Bux	Weaver	"	"	25th Sept. 1861
	Kurreem Bux	"	"	"	27th Nov. 1860
	Mostkeem and Peera	"	"	"	28th July 1861
40	Mahomed Bux	Dyer	"	"	29th April 1864
	Yarun	Weaver	"	"	25th Nov. 1865
	Waris	"	"	"	26th Jan. 1865
	Waris	"	"	"	17th Aug. 1865
	Jakmee Mull	Dullal	"	"	17th Oct. 1859
45	Munga Mull	"	"	"	18th Feb. 1867
	Gopalla	"	"	"	22nd March 1859
	Khooshea Ram and Girdaree.	"	"	"	28th June 1867
	Lalloo Mull	"	"	"	14th March 1860
	Ruheem	Weaver	"	"	24th May 1864
50	Mahomed Bux	"	"	"	15th Sept. 1860
	Rumzoo	"	"	"	11th Oct. 1862
	Wulloo	"	"	"	9th Nov. 1862
	Gamoo	"	"	"	10th Dec. 1860
	Rumzan Ali	"	"	"	7th Jan. 1861
55	Moostqueem	"	"	"	5th June 1857
	Mahomed	Dyer	"	"	3rd May 1859
	Kadoo	Weaver	"	"	2nd Nov. 1858
	Ahmud Bux	Dyer	"	"	13th July 1856
	Niamta	Shopkeeper	"	Mylsee	18th Nov. 1862
60	Allabux	Dyer	"	Mooltan	21st Feb. 1864
	Ahmed	Weaver	"	Kenore	27th Oct. 1859
	Korra	Goldsmith	"	Lodhran	24th June 1865
	Khema Mull	Shopkeeper	"	Mooltan	23rd Dec. 1857
	Nuwah	Service	"	"	26th July 1856
65	Nooran	Brickmaker	"	"	16th Oct. 1859

APPENDIX II.—continued.

Number.	Name.	Occupation.	Localities.		Date.
			From	To	
66	Ramoo	Weaver	Bhawulpore	Mooltan	3rd Sept. 1858
	Azeem	"	"	"	9th June 1860
	Alli	Dyer	"	"	15th Jan. 1856
	Khyr Mahomed	Weaver	"	"	29th Nov. 1861
70	Golam Russool	"	"	"	4th Oct. 1862
	Nujuff	"	"	"	17th Jan. 1861
	Buksoo	Blacksmith	"	"	23rd March 1860
	Golam Russool	Weaver	"	"	29th April 1862
	Peerun	Brickmaker	"	Shoojabad	2nd Aug. 1857
75	Mahamdoo	"	"	"	7th Nov. 1859
	Issa	"	"	Kenore	4th Feb. 1860
	Sooltan	"	"	Jogeewalla	15th July 1858
	Jahana	Weaver	"	Kenore	19th Feb. 1852
	Kurruum	"	"	Jalla Rain	27th April 1863
80	Kubool	"	"	Mooltan	4th Oct. 1859
	Ahmud Bux	"	"	"	17th Jan. 1864
	Noorun	"	"	"	14th Dec. 1861
	Golam Hussain	"	"	"	15th June 1861
	Kalloo	Carpenter	"	"	19th Sept. 1858
85	Noorun	"	"	"	24th July 1856
	Azeezoo	Reshum Phera	"	"	17th April 1861
	Wulloo	"	"	"	4th June 1859
	Jama	"	"	"	15th March 1856
	Suttar	"	"	"	19th Oct. 1860
90	Mahomed Bux	Weaver	"	"	20th Sept. 1860
	Golam Russool	"	"	"	4th July 1859
	" Kader	"	"	"	10th Feb. 1858
	Noorun	"	"	"	11th Jan. 1861
	Mahomed	"	"	"	19th Nov. 1863
95	Mahomed Bux	Tailor	"	"	17th June 1860
	Mahomed Moorad	"	"	"	23rd Oct. 1859
	Wallee Mahomed	Weaver	"	"	4th March 1861
	Boodhoo	"	"	"	25th Nov. 1851
	Chuttoo	"	"	"	27th July 1858
100	Alla Bux	Dyer	"	"	21st Sept. 1863
	Ahmud	Reshum Phera	"	"	26th Nov. 1860
	Rumzan	Dubgar	"	Khrypore, Mooltan	11th Oct. 1861
	Alla Bux	"	"	Mylsee	17th June 1858
	Koodrutoola	"	"	Shoojabad	25th Dec. 1863
105	Golam Russool	Weaver	"	Mooltan	4th Feb. 1859
	Khumeesa	Kunjur	"	Lodhran	15th April 1850
	Eeda	Weaver	"	Mooltan	16th June 1860
	Mahomed Bux	"	"	"	15th April 1861
	Alli	"	"	"	23rd Nov. 1855
110	Wabid Bux	Carpenter	"	"	18th May 1861
	Walli Mahomed	Weaver	"	"	21st Jan. 1860
	Abdoolla	Reshum Phera	"	"	12th June 1857
	Alla Rukha	Weaver	"	"	22nd March 1858
	Kadir Bux	"	"	"	3rd May 1860
115	Kadir Bux	Rufogur	"	"	4th Nov. 1863
	Futtoo	Weaver	"	"	18th April 1861
	Bukshan	"	"	"	21st May 1859
	Sharoo	Dyer	"	"	16th Oct. 1858
	Golam Kadir	Weaver	"	"	20th Dec. 1860
120	Mahomed Bux	"	"	"	24th April 1855
	Kurruum	"	"	"	29th Nov. 1857
	Abdoolla	"	"	"	25th Oct. 1860
	Jooma	"	"	"	3rd June 1859
	Guffoor	"	"	"	17th April 1861
125	Golam	"	"	"	14th Sept. 1862
	Golam Kadir	"	"	"	12th Feb. 1860
	Mahomed Bux	"	"	"	19th July 1858
	Kadir Bux	"	"	"	25th Dec. 1856
	Allayar	"	"	"	21st June 1861
130	Khumeesa	"	"	"	28th March 1867
	Boola	"	"	"	4th Feb. 1860
	Shurreef	Dyer	"	"	19th June 1855
	Golam Moortza	Fuller	"	"	18th April 1859
	Allah Bux	Weaver	"	"	27th Dec. 1861
135	Hyder	Fuller	"	"	29th Feb. 1860
	Dhullah Mull	Meenakar	"	"	25th Oct. 1862
	Roshun Mull	Goldsmith	"	"	13th June 1850
138	Wulloo Mull	Meenakar	"	"	15th Oct. 1866

APPENDIX II.—continued.

Number.	Name.	Occupation.	Localities.		Date.
			From	To	
140	Pursotum Mull	Meenakar	Bhawulpore	Mooltan	13th Jan. 1859
	Wassoo	"	"	"	18th Aug. 1863
	Muttra	"	"	"	15th July 1863
	Assa Mull	"	"	"	8th Dec. 1862
	Gurdhun	"	"	"	12th Feb. 1855
145	Khooshie	"	"	"	15th Oct. 1860
	Khooshie	"	"	"	4th June 1860
	Koodun Mull	Goldsmith	"	"	15th March 1861
	Pyara	"	"	"	19th May 1858
	Munga	Meenakar	"	"	20th Oct. 1860
150	Khewa	Goldsmith	"	Moozuffergurh	17th Feb. 1861
	Beeroo Mull	"	"	Hyatpore	19th Oct. 1855
	Wussoo	"	"	Lodhran	17th April 1859
	Korrora	"	"	"	20th May 1860
	Moolie	Meenakar	"	Mooltan	24th Oct. 1861
155	Dhunnoo Mull	"	"	Lodhran	29th Nov. 1859
	Looreenda	"	"	Mooltan	15th March 1855
	Alla Bux	Shopkeeper	"	Kat Lodhran	20th June 1855
	Kalla	"	"	Lodhran	18th March 1861
	Bunjoo	"	"	Mooltan	27th Nov. 1858
160	Moola	"	"	"	25th Aug. 1863
	Narain Mull	"	"	Lodhran	17th Feb. 1861
	Korra	Weaver	"	"	27th March 1862
	Sewa	"	"	"	4th April 1860
	Kadoo	Carpenter	"	Mooltan	15th June 1855
165	Khoda Bux	Weaver	"	"	20th March 1859
	Rumzan	"	"	"	17th Oct. 1860
	Alla Bux	Labourer	"	Shoojabad	26th June 1861
	Alla Bux	Weaver	"	Mooltan	23rd Oct. 1860
	Mahomed	Carpenter	"	"	24th Aug. 1862
170	Abdool Kureem	"	"	"	17th Oct. 1860
	Jewun Ram	Service	"	"	25th July 1858
	Rumzan	Dyer	"	"	24th June 1860
	Alla Bux	Fuller	"	Lodhran	15th July 1862
	Kallan	Beldar	"	"	20th Dec. 1860
175	Pulla	Labourer	"	Mooltan	15th Oct. 1859
	Mahomed Yar	Dyer	"	"	27th Sept. 1858
	Khumeesa	"	"	"	25th June 1865
	Luteef	Carpenter	"	"	29th April 1857
	Hyat	"	"	"	21st May 1860
180	Allao	Weaver	"	"	14th March 1861
	Alla Bux	"	"	"	24th June 1858
	Bakir	Kootanah	"	"	17th Feb. 1862
	Mahomed	Weaver	"	"	18th Jan. 1860
	Jewun	"	"	"	20th June 1858
185	Hafiz	Kuteek	"	Lodhran	24th Feb. 1861
	Kurreema	"	"	Sukker	28th March 1860
	Abdool Guffoor	Weaver	"	Mooltan	25th July 1859
	Ahmud	Kuteek	"	Sojabad	18th Dec. 1855
	Khallan	"	"	"	14th Jan. 1860
190	Waloo	"	"	Mooltan	19th Oct. 1862
	Moojawar	"	"	Sukker	15th Dec. 1860
	Buksham	Mochie	"	Mooltan	14th July 1858
	Akil	Kuteek	"	Sojabad	8th Feb. 1861
	Alla Bux	Saddler	"	Mooltan	10th June 1861
195	Golam Nubbee	Mochie	"	"	15th Feb. 1858
	Noor	Mochie	"	Shoojabad	17th July 1857
	Soohara	Suraj	"	Mooltan	20th Dec. 1859
	Khyrun	"	"	"	25th Oct. 1861
	Alli	Dyer	"	"	19th Jan. 1852
200	Moosa	"	"	"	27th July 1860
	Nuthoo	Weaver	"	"	24th June 1861
	Hukeem	"	"	"	13th Feb. 1863
	Golam Kadir	"	"	"	27th Aug. 1856
	Alla Bux	"	"	"	14th Oct. 1858
205	Oomaid Allie	"	"	"	17th June 1859
	Khooda Yar	"	"	"	27th Dec. 1860
	Jewun	"	"	"	13th Nov. 1862
	Pyara	"	"	"	10th July 1855
	Golam Kadir	"	"	"	14th Jan. 1857
210	Golam Hussun	"	"	"	19th Sept. 1860
	Rumzan	"	"	"	18th Feb. 1858
	Goordhun	Shopkeeper	"	Shahjanabad	14th June 1857
	Nuadoo	"	"	Mooltan	15th July 1859

APPENDIX II.—continued.

Number.	Name.	Occupation.	Localities.		Date.	
			From	To		
215	Mujnoo -	Shopkeeper -	Bhawulpore -	Sorut -	18th Aug.	1852
	Wullaya -	" -	" -	Mooltan -	" -	1854
	Bheri Mull -	Service -	" -	" -	17th July	1862
	Thakuria -	Shopkeeper -	" -	" -	18th Feb.	1860
	Dhunoo Mull -	" -	" -	" -	14th Aug.	1856
220	Thao Mull -	Hulwai -	" -	Lodhran -	17th June	1861
	Nyamta Mull -	" -	" -	" -	18th Dec.	1862
	Tala Ram -	Surraf -	" -	" -	15th June	1850
	Budda Mull -	Shopkeeper -	" -	" -	18th Dec.	1862
	Issur Mull -	" -	" -	" -	15th March	1863
225	Ludha -	" -	" -	" -	18th Sept.	1864
	Pyara Mull -	" -	" -	Mooltan -	9th July	1851
	Sooba Mull -	Service -	" -	" -	17th Aug.	1857
	Chuttoo -	Pekhur -	" -	" -	19th Oct.	1862
	Oodha -	Shopkeeper -	" -	" -	18th Sept.	1860
230	Koodun -	" -	" -	" -	20th June	1855
	Girdharee -	" -	" -	" -	18th Aug.	1860
	Lukhoo Mull -	" -	" -	Lodhran -	17th Oct.	1863
	Budhawa -	Service -	" -	Mooltan -	18th Dec.	1861
	Jessa -	Surraf -	" -	" -	20th July	1862
235	Futtoo -	Dullal -	" -	" -	24th Dec.	1851
	Sonoo Mull -	Moohussil -	" -	" -	18th July	1864
	Hukoonut -	Shopkeeper -	" -	" -	15th June	1849
	Wassoo Mull -	" -	" -	Moozuffergurh -	19th Oct.	1852
	Assoo and Looreenda -	Dullals -	" -	Mooltan -	18th Jan.	1854
240	Minkua Mull -	" -	" -	" -	12th Aug.	1855
	Lalla -	Shopkeeper -	" -	" -	20th Sept.	1855
	Dullah Lall -	Pundit -	" -	" -	18th Aug.	1865
	Nyamta -	Jotshee -	" -	" -	17th Oct.	1865
	Khooshie -	Shopkeeper -	" -	" -	20th Feb.	1862
245	Jubua and Tekoo -	Shopkeepers -	" -	" -	25th June	1858
	Phirai Lall -	" -	" -	Lodhran -	7th Aug.	1866
	Soonoo -	" -	" -	" -	18th Dec.	1863
	Sadhoo -	Beggar -	" -	" -	14th Nov.	1861
	Tapun Lall -	Hukkeem -	" -	Mooltan -	25th Feb.	1863
250	Jenemi Lall -	Jotshee -	" -	" -	18th Sept.	1862
	Rukha -	Shopkeeper -	" -	Mylsee -	24th Oct.	1857
	Mohun Mull -	Labourer -	" -	" -	18th July	1861
	Kishna -	Surraf -	" -	Mooltan -	24th Dec.	1861
	Kina Mull -	Shopkeeper -	" -	" -	18th Jan.	1861
255	Lukkoo -	Labourer -	" -	" -	15th June	1859
	Dewa -	" -	" -	" -	23rd March	1864
	Jessa -	Dyer, silk -	" -	" -	29th April	1856
	Rukkha -	Surraf -	" -	" -	24th May	1859
	Kunia Mull -	Labourer -	" -	" -	23rd June	1862
260	Kunia Mull -	Puttolee -	" -	Kenore -	29th Feb.	1859
	Wallaya -	Lace maker -	" -	Mooltan -	25th July	1861
	Moolia Mull -	Reshum Phera -	" -	" -	19th Aug.	1865
	Jhangir Mull -	Labourer -	" -	" -	29th April	1861
	Topun -	" -	" -	" -	13th March	1863
265	Gungoo Lall -	Jotshee -	" -	" -	29th Oct.	1862
	Moorlie Lall -	Hukeem -	" -	Shoojabad -	24th Jan.	1862
	Tikun -	Dullal -	" -	Mooltan -	25th July	1857
	Topun -	Reshum Phera -	" -	Dooniapore -	15th June	1857
	Gopalla -	Dullal -	" -	Mooltan -	29th Dec.	1864
270	Kullian Dass -	Shopkeeper -	" -	Shikerpore -	17th Jan.	1847
	Taroo Sing -	" -	" -	Sukker -	18th June	1847
	Loorinda Ram -	" -	" -	Shikerpore -	25th March	1838
	Tejbhaun -	" -	" -	Bokhara -	18th Dec.	1855
	Tikkun Mull -	" -	" -	D. G. Khan -	25th July	1852
275	Beeru Mull -	" -	" -	Shahjanabad -	18th Sept.	1852
	Desi Ram -	" -	" -	Sukker -	14th April	1855
	Lalla Mull -	Hulwai -	" -	Adamwaha -	12th Oct.	1865
	Bukshan -	Cultivator -	Banki -	Lodhran -	11th Dec.	1856
	Khyrun -	" -	" -	" -	" -	1856
280	Kurrma -	" -	" -	Mylsee -	15th July	1862
	Jewna -	" -	Gamooa -	" -	17th Nov.	1852
	Azeem -	Weaver -	" -	" -	15th June	1856
	Karra -	Cultivator -	" -	" -	18th Sept.	1862
	Khamba -	Meerasee -	" -	" -	29th Oct.	1862
285	Imamoo -	Cultivator -	" -	" -	14th Feb.	1856
	Noor -	" -	Issamatne -	" -	18th March	1862
	Huzoori and Aya -	Shopkeeper -	" -	" -	9th Dec.	1864
	Sonoo -	" -	Bhawulpore -	" -	6th Jan.	1861

APPENDIX II.—continued.

Number.	Name.	Occupation.	Localities.		Date.	Medium
			From	To		
290	Nanoo -	Shopkeeper -	Bhawulpore	Mylsee -	18th Oct.	1861
	Ahmud Bux -	Weaver -	"	Lodhran -	20th June	1859
	Kumal -	Cultivator -	"	"	10th April	1859
	Joomma -	Mochie -	"	Mylsee -	8th Jan.	1859
	Hussun Allie -	Cultivator -	"	"	5th Aug.	1857
	Bukshan -	"	"	"	7th Nov.	1857
	Jewun -	"	"	"	4th June	1863
295	Rumzan -	"	"	"	3rd June	1864
	Ghunoo -	Shopkeeper -	"	Lodhran -	4th Jan.	1859
	Goolamo -	Camel man -	"	Shoojabad -	4th Nov.	1867
	Meerun -	"	"	"	15th Oct.	1867
	Jewaya -	"	"	Mylsee -	15th July	1857
300	Thungi -	"	"	Shoojabad -	29th Feb.	1862
	Summoo -	"	"	"	15th Oct.	1857
	Jummoo -	"	"	"	10th Feb.	1860
	Peerun -	"	"	"	8th July	1857
305	Rumoo -	"	"	Mylsee -	6th Dec.	1857
	Khyroo -	Kombhar -	"	"	18th Aug.	1857
	Jindoo -	"	"	"	20th Sept.	1856
	Noor -	Labourer -	"	Roshum Shah -	14th July	1857
	Golam Hussun -	Cultivator -	"	Lodhran -	15th June	1856
310	Hussun Bux -	Dyer -	Khyrpore	} Mylsee - {	Left Khyrpore 7 years ago.	
	Ilahie Bux -	"	"		Do.	6 do.
	Mahomed -	"	"		Do.	5 do.
	Kadir Bux -	"	"		Do.	3 do.
	Allah Bux -	"	"		Do.	10 do.
315	Issa -	"	"	"	Do.	3 do.
	Shahooddeen -	"	"	"	Do.	6 do.
	Rummoo -	"	"	"	Do.	12 do.
	Boorhan -	"	"	"	Do.	12 do.
	Mahomed -	"	"	"	Do.	13 do.
320	Abdoolla -	"	"	"	Do.	13 do.
	Peer Bux -	"	"	"	Do.	5 do.
	Khodad Bux -	"	"	Khoad Ahmedpore Assur.	Do.	5 do.
	Mahomed -	"	"	"	Do.	10 do.
	Ahmud Allie -	"	"	"	Do.	10 do.
325	Hussun -	"	"	"	Do.	10 do.
	Mahomed -	"	"	"	Do.	10 do.
	Doolla -	"	"	Seetpore	Do.	3 do.
	Nubbee Bux -	Washerman -	"	"	Do.	3 do.
	Oomaida -	Cultivator -	Mobarukpore	Lodhran	Do.	2 do.
330	Kurrin -	"	"	"	Do.	1 do.
	Ahmud -	"	"	"	Do.	15 days ago.
	Khyroo -	Camel man -	"	"	Do.	2 years ago.
	Yarun -	Cultivator -	"	"	Do.	4 do.
	Peerun -	Brickmaker -	"	"	Do.	1 year ago.
335	Soohara -	Mochie -	"	"	Do.	5 months ago.
	Joomma -	Cultivator -	"	"	Do.	1 year ago.
	Khumeesa -	"	"	"	Do.	5 years ago.
	Pulla -	"	"	"	Do.	2 do.
	Rukha -	"	"	"	Do.	2 months ago.
340	Bukshun -	"	"	"	Do.	15 years ago.
	Peerun -	"	"	"	Do.	15 do.
	Gamun -	"	"	"	Do.	5 do.
	Hajee -	"	"	"	Do.	3 do.
	Mitha -	"	"	"	Do.	1 year ago.
345	Soba -	"	"	"	Do.	4 years ago.
	Mehrwan -	Weaver -	"	"	Do.	3 do.
	Golam Hyder -	Cultivator -	"	"	Do.	5 do.
	Rumzan -	"	"	"	Do.	5 do.
	Yarun -	"	"	"	Do.	6 do.
350	Khoda Bux -	Potter (kombhar) -	"	"	Do.	7 do.
	Noor -	Cultivator -	"	"	Do.	6 do.

(Signed)

C. MINCHIN, Captain Polt. Supdt. of Bhawulpore.

APPENDIX III.

COPY of EXTRACT from a Memorandum on the Dera Ghazee Khan District.

To sum up briefly, the irrigation works carried out in the district during the past four years at the joint expense of Zemindars and the Government are as follows:—

1st.—The Mussoowah, at the sole cost of projector, Musoo Khan Nootkani, at a cost of Rs. 26,000.

2nd.—The Dhoondie, at the joint expense of Government and the Zemindars, at a cost of Rs. 80,000.

3rd.—The Fazilwale and Dhori, at the sole cost of the projectors, Fuzil Allee Khan Loond and Secunder Khan Cosa, at an estimated cost of Rs. 18,000.

4th.—The Noor, by the Zemindars, at a cost of Rs. 6,000.

5th.—The extension of the Manka at a cost of not less than Rs. 65,000, of which Rs. 29,270 were paid by Government.

6th.—The Gamul branch of the Kadra Canal, on which the Zemindars have paid Rs. 28,000.

7th.—Branch canals from the Kaatule, at a cost of about Rs. 6,000.

On these works the capital expended by the chiefs and principal Zemindars of the district cannot be less than Rs. 1,50,000. Of other irrigation works the principal are the damming up the mouth of the Shoree Hill stream and making supply channels to irrigate the waste lands in front of Kim, which was completed this last year by the Muzari Chief, Emam Bux Khan, with the assistance of his tribe, of account of which Government has sanctioned the rent-free grant on the lands irrigated by this work for a term of 20 years, and the improvements of the several mouths and channels of the Gawaz, Norwah, Nye Shumalle, and Nowa Shahur branches of the Kabo Nullah in the Dajul Tehsil, at a cost of not less than Rs. 8,000, under the superintendence of Tehsildar Chummon Mull, to whom these works are entirely due.

(True Extract)

(Signed) C. MINCHIN, Captain, Polt. Supdt. of Bhawulpore.

APPENDIX IV.

STATEMENT submitted by Assistant Superintendent Moorad Shah.

All classes, both Mohomedans and Hindoos, are much happier under British than the Native rulers for the following reasons:—

1st.—Under Mahomedan rulers Hindoos are prevented from following out their religious rites; are often forcibly converted and circumcised, whether converted or not; and such acts are wantonly committed as are most obnoxious to their religious feelings, taking away their temples, destroying their Soukhs, killing bullocks near their Dhurmsallas, &c. Under the Sikh rule Mahomedans were not allowed to call the faithful to prayers. If any Mahomedan was caught killing a bullock secretly in the jungles, he was burnt alive; if done in a village, it was at once plundered and burnt. Under British rule both Hindoos and Mahomedans carry on their religious rites undisturbed. In Mooltan the Eedgah was seized by the Sikh and Hindoo Singh's Regiment put up in it; at the commencement of the British rule it was used as a kutcherry, but it was restored to the Mahomedans at Mr. Ford's application, and no gift could have ensured greater happiness and contentment. At the Eed thousands of Mahomedans assembled to bless the British rule for this signal instance of its liberality.

2nd.—Under the old Mahomedan rulers, Jhung Kote, Kumalia, and Derajat, and Mooltan were subject to continual inroads from the Sikhs, who harassed the whole country. No one dared cultivate the lands for fear of the crops being destroyed and their cattle carried off. Under British rule all is peace, and Zemindars are able to enjoy the fruits of their industry.

3rd.—The Government order prohibiting the keeping of arms has had the happiest effect in putting a stop to the disorders which were formerly so prevalent in those parts, where the following tribes residing in the Bar lived almost solely by plunder, so that no man's life or property was safe, viz., Kalias, Kumahanas, Sirganahs, Wuttoos, Ali Khanas, Bhirwanalis, Sinpats, Seals Supras, Baboo Jowannas Wainiwals, Kurrals, Truggers, Lungrials, Saholis, Hurrajes. At Bhawulpore in the present day murders are of frequent occurrence; in British territory, however, all such raids have been efficiently suppressed.

4th.—A few of the Mahomedan tribes and a large number of Hindoos, chiefly of the Khatree castes, were in the habit of destroying their female children at birth on account of the great expense attending marriages and their pride in considering no one worthy of mating with them. This has been noticed by the Government, and repeated efforts made to put a stop to it with the greatest success, so that, whereas these classes had become nearly extinct, they have now become populous, and the men of their families saved from a life of vice.

5th.—Under both Mahomedan and Sikh rulers the poorer Zemindars are much oppressed. The richer seized the lands of the poor classes, and if a complaint was made to the rulers, a handsome nuzzur soon confirmed the rich oppressor in his possession.

Under Sawun Mull the village of Shukroo, in the Mooltan District, was ultimately given to the Sirganah or Hurraj without reference to proprietary rights according to the amount of nuzzur either party presented to the Dewan. Under British rule nuzzuranas have been prohibited, and each person is maintained in possession of his own property.

6th.—Under Native rulers, in addition to the demand on the land, the following imposts were established:—Subzi mundi zekat, rahdaree, chelyek, mohars, chubootra, &c., so that the unfortunate proprietors had but little left to them from produce of their estates; their estates were heavily mortgaged in consequence: they are now freed from all these imposts; their estates are lightly assessed, and cultivation has increased.

7th.—The Bhawalpore State was a standing contrast, and the Zemindars residing in the neighbourhood could congratulate themselves on the exemption they enjoyed. Under Native rule the Zemindars were attacked both in property and reputation; every handsome virgin was at once sent for to the harem, and should the Nawab be pleased with her, she was retained, but if not, she was allowed to return to her home. It is this custom which swelled the numbers of women confined in the harem of Ahmedpore and Dillawur. The exactions of Nawab's servants, horse-keepers, bullock-drivers, and kunjkees were so great that hundreds of Zemindars, abandoning their possessions, sought safety and protection in British territory.

8th.—Again, under Native rulers, merchants and traders suffer great hardships; they are stopped at every town and village, their goods are opened and examined, and they have to pay large sums for zekat (customs), rahdaree (transit dues), chubootra (town dues), goozar (ferry dues), &c., from nearly all of which they are exempt under British rule, and they can go from one end of the Empire to the other without molestation and their goods protected by the Police.

9th.—Lastly, under Native rulers, whenever lands are required for public purposes, they are seized and no compensation awarded, whereas under British rule the compensation amply remunerates them for their property.

(Signed) C. MINCHIN, Captain, Polt. Supdt. of Bhawalpore.

From W. G. PEDDER, Esq., Superintendent, Revenue Survey and Assessment, Kandeish, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department, Simla.—(No. 234, dated Malligaum, August 16, 1867.)

IN reply to your confidential letter, dated Simla, 1st July 1867, I have the honour to submit the following report.

2. The points at issue are two,—1st, whether the people are really more prosperous under British than under Native rule; 2nd, whether they consider themselves to be so, *i.e.*, are happier. I will consider these points with reference to—I. taxation; II. security of person and property; III. administration of civil and criminal justice in the provinces with which I have some acquaintance, *viz.*, Guzerat and Kandeish. I must premise that the Native governments with which I contrast British administration are those of the Mahratta Powers, the Peshwa, Scindia, Holkar, or the Gaekwar, to which our rule succeeded, and which are probably the only alternative to it in the Bombay Presidency.

3. Having been employed for many years in Guzerat on special duties connected with the settlement of the land revenue, and of the various titles to land in that province, I have had peculiar opportunities for making myself acquainted with the early records of all the Guzerat Collectorates. In particular I have read a great number of documents prepared soon after the introduction of British rule, in which is recorded all the information which the old Patels could then supply regarding the history of their villages. Many of these papers are very interesting, and give the village annals from the end of the 17th century. The quotations in this letter, where not otherwise noted, are from the Honourable Mountstuart Elphinstone's Report on the territories conquered from the Peshwa, written in 1821.

4. I.—*Taxation.*—There can be no doubt whatever that the weight of taxation generally was much greater under the Mahratta than under the British Government. It is said that the revenue derived by the different Mahratta Governments at the end of the 18th century from the Deccan, Khandeish, and Guzerat amounted to 25,000,000*l.*, or one-fifth more than the whole land revenue of British India. Yet the country was unquestionably much poorer than it now is. In 15 districts of the province of Kandeish, the cultivated area in 1818, the first year of British rule, was little more than four lakhs of acres. It now exceeds 13 lakhs. The Mahratta theory of land assessment, indeed, was that half the gross produce belonged to the State.

5. Not only were the demands of the Mahratta Government heavy, but they were uncertain, varying from year to year, and composed of many different items, and were often nearly equalled by additional illicit exactions. The Deccan cultivator was doubtless the best off under Mahratta rule, as his government was a Native one, and his district, before the introduction of the farming system, was managed by a salaried official who had an interest in its prosperity from the long period for which he was allowed to hold it. Yet, under these most favourable circumstances, the ordinary assessment he had to pay was composed of the following items:—Sirdeshmookhi Chout and Jagheer Chout, divided into Babtee and Mokassa, Mokassa into Ein and Schotra. This gives, says Mr. Elphinstone, “but an imperfect idea of the numerous sub-divisions which have been made in most parts of the country. Some were assigned to jagheerdars; but when they all fell into the hands of Government, it kept them up in name, and even in practice. One man would collect Sirdeshmookhi, another Jagheer, a third Mokassa, a fourth Babtee, a fifth Schotra, in the same village. Where there was a defalcation, each endeavoured to collect his own and throw his loss on his neighbour, and a general struggle ensued, in which the ryots were sure to suffer.” The regular land tax was composed of these items; but, in addition, the cultivator had to pay those included in the “Sewai jumma,” such as house tax cesses, taxes on animals, &c., and also an extra assessment, “Sadur-Warid Pattee,” “the grand source of the Mamlutdar’s profit, levied to pay expenses not provided for by Government, one of the chief of which was called ‘Untust,’ and was originally applied secretly to bribe the ministers. By degrees these bribes became established fees; but as bribes were still required, another increase of collections took place for this purpose; and as the auditors did not search minutely into these delicate transactions, the Mamlutdar collected much more for himself than for his patrons.” In years when the harvest was particularly good, or when an extraordinary emergency occurred, an extra cess, “Yek-Sali Pattee,” was imposed, and frequently not taken off when the occasion for it had passed away. Besides all this, the cultivators had to pay direct “Huks” to village and district officers, often heavy in amount. The mode of realizing these demands was simple. “If a ryot refused to pay, the Sebundy confined him, exposed him to the sun, put a heavy stone on his head, and prevented his eating and drinking till he paid.”

6. All these evils were much aggravated under the farming system. “The office of Mamlutdar, instead of being conferred as a favour on a person of experience and probity, was put up to auction for one year among the Peshwa’s attendants. The Mamlutdar, thus constituted, had no time for inquiry, and no motive for forbearance; he let his district out at an enhanced rate to under-farmers, who repeated the operation till it reached the Patels. If one of these officers farmed his own village, he became absolute master of everyone in it. No complaints were listened to. If the Patels refused to farm the village at the rate proposed” (I have seen in old Guzerat records instances of their being compelled to do so by torture), “the case was worse, as the Mamlutdar’s own officer undertook to levy the sum determined on, with less knowledge and less mercy than the Patel. In either case the actual state of the cultivation was disregarded; a man’s means of payment, not the land he occupied, was the scale on which he was assessed. No moderation was shown in levying the sum fixed; every pretext for fine and forfeiture, every means of vigour and confiscation, were employed to squeeze the utmost out of the people before the arrival of the day when the Mamlutdar was to give up his charge. Amidst all this violence, a regular account, of course fictitious, was prepared. When the time came for the Mamlutdar to make up his accounts, his exactions were most severely felt, for he had a certain sum to make up, and if the collections fell short he portioned out the balance among the exhausted villages, and left the Patels to extort it on whatever pretence and by whatever means they thought proper.”

7. The above relates only to the land revenue. The non-agricultural classes were equally heavily taxed. They had to pay house-tax, shop-tax, taxes on domestic animals, mohiturfa or licence-tax on trades, licence-tax for marriages, for the right to beat drums on festivals, on weights and measures, &c.; also zekat or customs (a great check to trade, as it was levied separately in every district through which the goods passed), nuzzur or succession duty, a tax of 12 per cent. on sales of animals, kotwalee or town duties, including a tax of 17 per cent. on the sale of houses, &c. That

these taxes were not light is shown by the fact that, in the province of Ahmedabad the produce of them nearly equalled the land revenue.

8. If this was the state of taxation in the Deccan, it was much worse in Guzerat, where the people, in race and language, were foreign to their Mahratta rulers, where the farming system was introduced earlier and more systematically than in the Deccan, and where districts were portioned out between the Moguls, the Peshwa, the Gaekwar, and Scindia, which Powers were continually at war, so that a single village was often called on to pay revenue to two or more at once. In mowass and talookdari districts, those in which the land belonged to Rajpoot or Kolee Chiefs, the revenue was only collected by sending round a moolukgiri army while the crops were standing; and as the chiefs made resistance a point of honour, the collection of the Government demands was annually attended with bloodshed and wide devastation, the result being that the most powerful chiefs paid little, the weaker were crushed by the exaction. In crown districts the revenue settlement of Akbar, and the proprietary rights based on it, almost entirely disappeared; the constitution of most of the joint village communities, and the distinction between proprietary and non-proprietary cultivators, was destroyed; many villages relapsed into the bhagbottai or metagar system; but the benefits of that system were completely neutralized by the practice of imposing arbitrary cesses in addition to the Government share of produce, the worst of which, "Jasti-Vero," was meant to secure to the farmer of revenue the profits of an exceptionally good harvest. In other villages, the revenue system was that of crop or of caste rates, also supplemented by cesses; and in many, all these systems prevailed at once, so that no cultivator could have any idea of what he ought to pay. I may give two examples of the way in which the Guzerat peasantry were rack-rented under Mahratta rule. The assessment of a village near Ahmedabad, which, when it passed into the hands of the Gaekwar, was paying 80% per annum, was raised in a single generation, during which it was repeatedly burnt and deserted to 600%, when it was finally abandoned. And while Scindia held Broach during the last quarter of the 18th century, he farmed the district for a short term to an hereditary officer, whose exactions were so oppressive that the people proved he had raised in four years nearly 80,000% more than the sum for which he had contracted, including the stipulated percentage for expenses of management. Scindia in this fined him 80,000% which sum was not, however, returned to the defrauded cultivators, and deprived him of his farm, which was immediately undertaken at an enhanced rate by a Surat banker. This revenue system, together with the incessant wars and total absence of security, resulted in destructive famines, to alleviate which nothing, so far as I know, was done by the Mahratta Governments, and one of which, that of A. D. 1803, so completely depopulated the once thriving province of Kandeish that there are still large waste tracts, now uninhabitable from malaria, but full of the ruins of what were once flourishing villages.

9. It is hardly necessary to compare the British revenue system with that above described. Now, the non-agricultural classes pay no direct taxes whatever, except the recently imposed licence tax, and the indirect taxes which they pay in common with the agriculturists, the salt duty, customs, and excise, &c., are unquestionably infinitely lighter than the imposts of the Mahratta Government. The land revenue is now of the nature of a rentcharge; it probably averages less than one-seventh the gross produce, and in some districts is less than that. Under the Bombay survey system, it is regulated entirely by the value of the land; it is fixed for 30 years, and cannot be raised against the holder at the expiry of that period on account of any improvements he has made; all imposts whatever, including "Huks" of villages and district officers, are consolidated with the land assessment; the mode of realization in case of default is simply by sale of the land, and every peasant has his receipt book, in which the extent and assessment of his holding are entered, so that illicit exactions are nearly impossible; while, in Guzerat at least, the rights of superior holders, whether landlords, such as talookdars, or joint village communities, are carefully upheld.

10. I have never heard from any cultivator any question of the infinite superiority of the British over the Native system of land revenue. There is nothing that the Bombay ryot thinks of such consequence as the consolidation of all imposts into one assessment on the land. So much is this the case, that I have been repeatedly asked to do away with the merely nominal distinction between Local Fund and Imperial

Revenue (the former being one anna to every Rupee of assessment, but assessed and levied in precisely the same way), merely because the people thought it of more consequence to preserve the principle of a single assessment than to have the advantage of claiming that a portion of their assessment should be expended upon local improvements.

11. The only objections I have heard to the Bombay revenue system have been from landlords, such as Inamdars, and from traders; the former, because they find that the advantages enjoyed by Government cultivators have a tendency to reduce their rentals; the latter, because they think that the income tax and now the licence tax have been rendered necessary by the moderation of our land assessment, and that good government consists in providing for all the expenses of the State out of the land revenue.

12. On the whole, I am convinced, not only that our revenue system is infinitely superior to that of the Mahrattas, but that the people generally feel that it is so.

13. II.—Security, or otherwise, of property in the soil, must, in a country like India, be one of the points on which the happiness of the people is most affected by the Government. By the Bombay settlement an indefeasible hereditary transferable right of property is given to every occupant of Government land, subject only to payment of the assessment, and that the people value this is shown by the common phrase, “the Sircar has given us all its land in miras.” Now, in Guzerat, though a certain proprietary right of the cultivator in crown lands was of very ancient date, was apparently more or less acknowledged by the Mahomedan Kings, and was confirmed and even extended by the settlement of Akbar, yet I cannot find that the Mahratta Governments respected it in any way, or that they treated any Government cultivator as otherwise than a tenant-at-will, and the same was the case in Kandeish. But in the Deccan, though much land was cultivated by “Ooprees,” or tenants-at-will, yet a large proportion was held as miras, or hereditary and transferable property. This mirasi right was much prized by the people, and “no species of property was so much respected by the Government;” still, though “the tax on miras land was fixed, the Mahrattah Government loaded it with other impositions, who reduced that advantage to a mere name, and took advantage of the attachment of a mirasdar to his land to make him pay considerably more than an Oopree.”

Report of Captain Grant, Political Agent at Sattara in 1819.

14. The most unpopular measure of the British Government has probably been the appointment of the Bombay Commission of inquiry into the title to alienated land. But the Mahratta Governments, though they seem generally to have avoided nominal resummptions, had no scruple whatever in appropriating the profits of alienated lands by the imposition, under the plea of necessity, of such taxes as “Duleah Puttee,” “Inam Tijavee,” &c., and often permanently. An instance of this is a fine village which was granted about the end of the 15th century by one of the Sultans of Ahmedabad for the support of a Mahomedan shrine. The Mahratta Governor of Ahmedabad demanded a quit-rent from the holder of this village, who refused it, pleading that the original grant was free of assessment. The Mahratta admitted this, but immediately imposed, under the name of cesses, an assessment upon the cultivators at least as heavy as that upon neighbouring government villages, so that the landlord, nominally holding his village free of assessment, really derived little or no income from it; such cases were numerous. It must, however, be allowed that the great unpopularity of the Inam Commission arose from its claiming to act upon principles of justice, but which no Native would allow to be just.

15. It is easy to admit, as Natives freely do, that British rule has given greater security of person and property; but few persons can now realize what was the state of things to which it succeeded. It is not too much to say that in this respect the present condition of Guzerat and Kandeish differs as much from the condition of those provinces in the 18th century (expressively called by the Guzerat peasantry the time of the Guneems or plunderers), as that of the England of Queen Victoria from the England of Stephen.

16. The following facts will illustrate this statement:—

1st.—A very numerous class in Guzerat are the Kolvees, who, though they are fond of claiming a Rajpoot descent, and though some of their chiefs are really half-bred Rajpoots, are not of Hindoo blood, but are descendants of the aboriginal tribes who inhabited the province before

the Aryan conquest. They have, however, long adopted, at least in great part, the Hindoo religion and manners. By no class are the

There is an interesting account of the state of the Guzerat Kolees in Bishop Heber's Journal.

benefits of British rule more clearly shown. Fifty years ago the Kolees were a restless, turbulent race, defiant of authority, despising agriculture, living by plunder, and famous throughout India for the skill and daring of their predatory exploits, of which strange tales are still told. The names by which they were known denoted their habits. They called themselves "Shumsher Bahadoor," and were designated by others "Dharola," or armed people—a name which they still retain. They have now universally settled down in peaceful husbandmen, some of whose villages, in comfort and skilful cultivation, may vie with those of Koonbies; open resistance to authority is unknown, and even petty robberies are comparatively rare. I have spent nine years in every part of Guzerat without a guard, and have never had my house or tent robbed. In a civil case, a few years ago, it appeared that a cart, containing valuables, worth about 1,000*l.* was insured between Ahmedabad and Patree, a road which passes through a district of Kolies, who used to bear the worst reputation for a few upees. The insurer, an old banker, was asked for what he would have insured it 50 years ago, and replied, not for half its value; he must have sent 100 armed men with it.

2nd.—The Rajpoot Chiefs, who mostly resided on the frontiers, made a regular practice of levying black mail (called Tora Girass, whence these chiefs are called Girassias) to such an extent that in many districts not a single village was exempt from the imposition. If it was not regularly paid, the village was burnt and the Patels carried off to be held to ransom. Two or three years after the cession of Surat, a village within a mile of the British cantonment was burnt for this reason by a Rajpoot Chief, who escaped to the hills, carrying off the Patels, who had to be ransomed by Government after being tortured. The black mail has long been commuted into pensions paid by Government to the chiefs; and Rajpoot incursions have for many years been as much unknown as are highland forage in the lowlands of Scotland. But a curious illustration of the old state of things exists in the "Paleeyor," or tombstones so numerous in Guzerat villages, which were erected to commemorate peasants who fell in defence of their homes.

3rd.—Besides the sufferings of the province from robber tribes, every petty chief and every village during the 18th century waged war with their neighbours at discretion; boundary disputes, which have now been peacefully arranged, being the commonest cause.

4th.—The coasts of Guzerat and the Konkan suffered dreadfully during the 18th century from the ravages of pirates. On one occasion all the women of a Brahmin town were carried off by Mahomedan pirates, who not only violated them, which perhaps was not thought of so great consequence, but deprived them of caste by forcing beef into their mouths. During 1857–58, I heard a story that the inhabitants of a coast village were talking over the war, and some of the younger men expressed a wish for the success of the rebellion. An aged Patel, pointing to a lofty palm on the seashore, said, "I remember when a man always sat in that tree to give warning of the approach of pirates, and once or twice a year we had to fly inland with our cattle and property. You have never seen a pirate, and I recommend you to pray for the Sirkar."

5th.—In Kandeish, the Bheels or aboriginal tribes, sallying from their fastnesses in the hills, committed great ravages upon the villages of the plains. The policy of the Mahrattas towards these people was cruel in the extreme. A common punishment for a Bheel, whose only crime perhaps was his being a Bheel, was to be tied to a red-hot gun. Numbers of them, with their wives and children, betrayed by treachery, after being flogged or mutilated by the amputation of their noses, ears, and the breasts of the women, were thrown down preci-

pices or into dry wells. They of course retaliated when they could by similar atrocities. The Bheels are now perfectly peaceful, and many of them live in the plains as cultivators of Government land or agricultural labourers.

6th.—Kandeish is full of dismantled hill forts. These were supposed to curb the hill tribes, but during Mahratta rule they were occupied by Arabs and other mercenary troops, who laid the whole country under contribution and committed great atrocities.

17. The Natives in these provinces are quite willing to admit the fact of their living far more securely under British than under Mahratta rule. But the generation which felt the miseries of Mahratta misgovernment has passed away, and I think the tradition of it is growing faint among them. Perhaps the words of

* "These ungrateful subjects could never be reconciled to the origin, the religion, or even the virtues of the Gothic conqueror; past calamities were forgotten, and the sense or suspicion of injuries was rendered more exquisite by the present felicity of the times."

Gibbon, regarding the Kingdom of Theodoric in Italy, may be applied to them.* They are apt to complain of our police system, and, notwithstanding the great results which it has effected, not perhaps altogether without reason. They accuse the police of inefficiency in detecting crime, of corruption, and, to some extent at least, of oppression. They forget, however, that, if the police is bad, it is chiefly because good Native material for it is so difficult to procure, and that the fault lies in great measure with themselves. They are so timid, that respectable people will not communicate what they know to the authorities; and so false, that, if the latter seek for information regarding the police, they are deluged with groundless accusations, often directed against the very men who are trying to do their duty, because they carry out sanitary or other measures, which happen to be unpopular.

18. III.—It is very difficult to give any description of the administration of civil and criminal justice under the Mahrattas, because in Guzerat at least no fixed system could be said to exist. The following sketch, therefore, refers to the Deccan, and it will be understood that whatever were the evils of the system in that province, they were exaggerated in Kandeish and Guzerat :—

"The power of administering criminal justice was vested in the Revenue Officers, and varied with their rank—from the Patel who could imprison for a few days, to the Sirsoobhadar, who had power of life and death. The right of inflicting punishment, however, was very undefined; one Patel would flog and fine and put in the stocks for many weeks, another would not venture even to imprison. Most Mamlutdars would hang a low caste robber without a reference; a chief had full authority over his troops and servants. There was no prescribed form of trial; a Bheel, caught in a part of the country where Bheels were plundering, would be hanged immediately. In doubtful cases the chief authority would order some of the people about him to inquire into the affair. The prisoner was examined, and if suspicions were strong, was flogged, to make him confess; even in common criminal trials no law seems ever to have been referred to. The only rule was the custom of the country, and the Magistrate's notion of expediency; great abuses are said to have at all times existed. Criminals found refuge in one district when chased out of another; some jagheerdars made a trade of harbouring robbers; false accusations were made a cloak for exactions; any offender could purchase his release, if he had money enough to pay for it; and Mamlutdars would sometimes release even Bheel robbers and allow them to resume their depredations on payment of a sum of money." Punishments were regulated more by the caste or influence of the offender than by the nature of his crime; "and the commonest was fine and confiscation, to which the Mamlutdar was so much prompted by avarice, that it was difficult to say whether it was inflicted as a regular punishment or made use of as a means of gaining wealth."

19. Notwithstanding the obvious evils of a system so lax and corrupt as that here described, Mr. Elphinstone says that crime *in the Mahratta country proper* was rarer than might be supposed.

20. The Mahratta system of civil justice is described as follows :—

"The authorities by whom civil justice was administered were the Patel, the Mamlutdar, and Sirsoobadar, and, above all, the Peshwa jagheerdars administered justice in their own lands with little or no interference from Government. In some large towns was a Judicial Officer. If a complaint was made to a Patel, he would send for the person complained of and interfere, partly as a friend, to settle the mode of payment of the debt. If it was disputed, he assembled a punchayet, who

inquired into the matter, with the consent of the parties, with very little form, and decided as they thought best; or the complainant went to the Mamlutdar, who proceeded nearly as the Patel, but who could compel the defendant to submit to a punchayet. There was no regular appeal; the superior authority would not revise the decision of the inferior, unless in cases of gross injustice or corruption; in cases of less purity, that is, in almost all cases, the superior was influenced in receiving the appeal by the consideration of the profit promised. The members of the punchayet received no fee, but when they had much trouble, the winner made them openly a present. A sum of money was levied for Government from the winner and from the loser; one-fourth of the property is put down as the price paid for justice by the plaintiff when he wins. When a matter had come to a trial, it was expected that Government should enforce the decision, but with the irregularity characteristic of the Mahrattas, the plaintiff was often permitted to enforce it himself. This system in the best of times was very imperfect. There was no regular administration of justice, no certain means of filing a suit, no fixed procedure. It rested with the officer applied to to receive, or neglect, a complaint. There can be little doubt of the difficulty of getting justice, except by means of bribery or of powerful friends. The punchayets themselves were open to corruption or partiality, and had not sufficient powers. No decision was final, and there was as much difficulty in being exempt from an unjust revision as in obtaining a just one. Under the farming system things were worse; justice was openly sold. The party in the wrong could always, by a bribe, prevent the cause going to a punchayet, or upset the decision of one. The Government afforded little justice to the rich and none to the poor; yet the system had some advantages to counterbalance its obvious defects, most of which originated in one fact, that the Government, though it did little to obtain justice for the people, left them the means of procuring it for themselves. The advantage of this was particularly felt among the lower orders, who are most apt to be neglected under all governments. By means of the punchayet they were enabled to effect a tolerable dispensation of justice among themselves. The intimate acquaintance of the members of the punchayets with the subject in dispute made their decisions frequently correct, and it was an advantage of incalculable value that the Judges, being drawn from the body of the people, could act on no principles that were not generally understood. The inertness of Government was counteracted by various expedients which, objectionable in themselves, supplied the place of better principles. These were private redress, patronage, and presents."

21. It would seem absurd to make any comparison between a system so lax and corrupt as that above described, and our pure, systematic, and impartial, administration of civil and criminal justice. Yet I feel bound to say that, so far as my observation goes, the Courts are the most unpopular branch of our administration, not indeed among the educated or mercantile town population, but among the great mass of the peasantry. Some years ago the Gaekwar introduced, as a reform, a Civil Procedure Code founded upon ours in his territories in Guzerat, on which a Patel in one of his villages remarked that his subjects were going to be deprived of the solitary advantage they had over the "Sirkar's ryots," that of having no Civil Courts.

22. This feeling is not, I think, caused by any doubt of the purity, justice, or independence of the Courts; on the contrary, the people value them highly as a safeguard against any oppression on the part of the administrative officers of Government. It arises, I believe, chiefly from the following causes.

23. As regards Civil Justice—

1st.—Though the nominal interest on debts was very high under Mahratta rule, yet the debtor had a good chance of escaping payment altogether, and might be pretty sure of being able to free himself by a reasonable compromise. The establishment of the British Civil Courts gave creditors, mostly of the mercantile classes, prompt and effectual means of enforcing their claims against the peasantry, who had contracted the debts under very different circumstances. Partly from an economical cause (the fall in the value of produce which succeeded the introduction of British rule), but in very great measure from the action of the Civil Courts, the whole of the peasantry of this Presidency were for nearly two generations crushed under a load of debt. They attributed their calamities entirely to British administration, and the Mahratta proverb, "the pest of Courts," shows their feeling.

2nd.—Since, of late years, the rise of prices, and an equitable and moderate revenue settlement, have enabled the peasantry generally to throw off their debts, this feeling has become traditional rather than based on an existing state of things. And in important cases, involving considerable amounts, the people are, I think, quite satisfied with the Civil Courts. But they complain bitterly of the difficulty, expense, and trouble required to get redress in petty cases, now that their own punchayet system has sunk into disuse. One sees this very much in settlement work. In a country of peasant proprietors there are numerous petty disputes about land, mostly presenting no difficulty, but beyond the competency of a Revenue Court; yet, attached as the people are to their rights in land, they often, perhaps generally, prefer to sit down under an injustice rather than apply to a Civil Court.

The best remedy for this, in my humble opinion, would be an extension of the system of Small Cause Courts.

24. One of the objections made to our system of criminal justice is the many chances of escape which it affords to criminals. But the chief cause of its unpopularity is the inconvenience which it inflicts upon prosecutors and witnesses. The people have little public spirit, and, at the best, are apt to think it hard that a man must leave his occupation, and perhaps incur enmity, to give evidence in a case which does not concern him. This feeling is intensely aggravated where, as in a province like Kandeish, with an area of 15,000 square miles, prosecutor, prisoner, and witnesses, have perhaps to travel 300 or 400 miles in a single case, and it is of no small importance where it unites the whole population in opposition to the administration of justice. I should like to see the sessions held, instead of at the sudder station, quarterly or half-yearly at all the chief towns of the province. Prisoners, it is true, would thus have to wait longer for a sentence, but much inconvenience would be saved to prosecutors and witnesses.

25. I have hitherto compared British rule with that only to which it succeeded. Perhaps I should contrast it with the only existing Native State with which I am acquainted—that of Baroda. Never having held a political appointment, I do not know much of the administrative system of the Gaekwar's government, but I have travelled much in his territories, and conversed freely with many of his subjects.

26. The impression I have formed is, that although the Gaekwar's administration (chiefly owing, it must be said, to the example and admonitions of the British Government) is probably better than that of the Peshwa's dominions under Nana Furnavees, and is certainly infinitely superior to that under Bajee Rao, though he himself is an intelligent Prince, and several of his ministers able and enlightened men, though his people complain little, and his Government generally is perhaps better than that of most Native States, yet the people of the adjoining British territory are better governed and more prosperous, and that they are fully aware of it.

27. In the first place taxation is far heavier in the Gaekwar's than in British territory. Petlad, a Kaira district, was equally divided between the Peshwa and the Gaekwar, the share of the former afterwards falling to the British Government. I have been told, I believe correctly, that the revenue of the Gaekwar's share is nearly treble that of the British share. I have found the same difference between the rates of assessment in force in Gaekwar villages and those imposed by the settlement in neighbouring Government villages. There are also many imposts besides the regular land assessment, which fall on both the agricultural and non-agricultural classes. Taxation is also uncertain, the assessment not being fixed for any period, and being regulated more according to the means of the cultivator than to the value of land. I believe, however, that the Gaekwar's government is making some efforts to put the assessment on a more equitable footing. The system of farming the revenue is still in force in the greater portion of the Baroda State, and the frequent and troublesome outbreaks in the Gaekwar's territory in Kattywar are said to be chiefly owing to the oppressive measures of the farmers. The administration of justice is capricious, and punishments, though uncertain and easily evaded by criminals of wealth or influence, are cruel. "Don't think," said a Native gentleman to me of a criminal whom the Gaekwar had sentenced to imprisonment, "that the Baroda Jail is like that at Ahmedabad; one year in the Gaekwar's jail is much worse than seven in the Sirkar's." The people certainly believe, truly or not, that corruption is rife in all departments of the State, and acts of what we should consider downright oppression on the part of the Government, are not uncommon. I have heard that

two or three years ago the chief men of a fine Gaekwar village were imprisoned, and the village fined Rs. 40,000, because a courtesan, a favourite of the Gaekwar's, was insulted there.

28. I certainly think that the people of our territories in Guzerat consider themselves fortunate in not being subjects of the Gaekwar. The Guzerat Koonbies are a remarkably sturdy, independent race, and will often wrangle for days over a slight increase made in the revision of their assessment. In such cases I have often asked them if they would like their village exchanged for one of the Gaekwar's, and have always had the same answer, "anything but that." Any measures which they do not like they commonly describe as "like Gaekwar zoolum." It has been stated in the House of Commons that emigration from a foreign State into British territory is hardly known. Throughout the greater portion of the Guzerat Collectorates the land is so fully occupied that there is no room for new settlers; but in two or three of the northern districts, where there was much waste, cultivation doubled itself within a few years of the introduction of the survey settlement, and this was in very great measure due to immigration from the Gaekwar's country.

29. I have said nothing in this report of such measures as popular education, sanitary reform, and improvement of the means of communication, which were never dreamt of under a Native Government.

30. Perhaps the best test of what is the popular feeling towards our rule is to be found in what the Native papers say of us. Liberty of the press has been so long established, and is so fully understood, that I am quite sure that there is no reticence on the subject of British administration in the vernacular papers, and it is certainly the fashion among educated Natives here to assail the Government and its officers—a fashion which arises partly from our personal unpopularity with them, partly from a sincere desire to improve the administration and to reform abuses; yet complaints against British rule are not numerous, and are generally of a very trivial nature, while those against the administration of Native States are constant and more serious. I have just been looking through a file of recent vernacular papers. I find in these two complaints regarding British rule,—one insisting on the hardship of people having to serve as assessors in the Courts, the other a personal attack on an officer for assaulting some coolies. There are ten or twelve complaints affecting Native states. One chief is accused of imposing a special income tax of 25 per cent. on all his people on the occasion of his daughter's marriage, and others of different acts of oppression, or of generally corrupt administration.

31. On the whole, I think the following to be a tolerably fair account of the feeling of the Natives towards British rule in the provinces with which I am acquainted:—

The principles of our Government and, in a lesser degree, our administration, are generally approved by all classes.

We are tolerably popular among the agricultural and mercantile classes, which form the bulk of the population.

Our rule is now unpopular with the poorer town population, who suffer from the high prices which have benefited the country generally, and which they ascribe to the action of Government.

We are personally intensely unpopular with the higher, and especially with the educated, classes.

From LIEUT.-COLONEL W. W. ANDERSON, Acting Political Agent, Kattywar, to the UNDER-SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department.—(Dated Rajkote, August 12, 1867.)

YOUR confidential communication to the address of Lieutenant Colonel Keatinge reached this office after the departure of that officer on leave to Europe. I nevertheless forwarded a copy of it to him by the following mail, and he may most probably address you himself on the subject.

2. As His Excellency the Viceroy would seem anxious to have any statements on the subject of your letter, which the experience of Political Officers may enable them to furnish, and as I have, as you are aware, spent the last twelve years of my service as such in this province, I venture to offer the following remarks.

3. Kattywar, from its isolated position, and having only a very small portion of its territory bordering on the British district, has not been so well able to observe the benefits of our rule as countries more fortunately situated.

4. Divided, as it is, moreover, into so many, and in some cases petty, principalities, it is difficult to procure statistics for the purposes required. With the exception of attachments imposed on States for various causes, which, by enabling us occasionally to have an improved management, and thus show the benefits of our rule, there are none I conceive bearing on the case that would be of material use, with the exception perhaps of the following.

5. By late orders of Government, the Rajpoot States of Rajkote and Limree, with annual revenues of about five lakhs collectively, have been placed under British management, and here, although the time has been but short, it has been clearly shown that our rule is far more palatable to the mass of the population than the former Native rule. The abolition of forced labour monopolies and other vexatious taxes alone has given the people such relief that order and contentment now exists where formerly discontent and general complaint was the rule.

6. Again, the young Thakhoor of Veerpore, a Rajpoot, has had his State attached for a term of seven years, and placed under the direct management of the Agency, consequent on his complicity with Wagher outlaws. The revenues were but small, but now cultivators are flocking in and taking holdings, being assured of protection and of obtaining equitable ratings, and that the new management will be one of mildness and justice.

7. In the same way, from experience I feel convinced that, as a rule, the working classes and the general mass of the Native population prefer British rule. The numberless complaints which in former years came before this Agency, and in which endeavours were made, where we consistently could do so, to induce the Chiefs to give redress, clearly prove this. In almost every case, the harshness of Native rule as compared with our own was freely commented on, and not unfrequently urgent request for us to take the management into our own hands openly made. Even of late years, since the concentration of power in the hands of the chiefs, this has been apparent. This measure, though doubtless one of policy and strict justice, has not tended to produce in my estimation that improvement in the interior management of States generally which we had reason to suppose it would. Cases of extreme hardship, subversion of agreements and arrangements entered into, frequently come before us, all of which go far to show that Native rule has by no means those attractions for all classes of the people which the late Secretary of State would appear to have been led to think it had.

I think, therefore, there can but be one opinion on this subject, and that the views which His Excellency the Viceroy holds are correct, and will be fully borne out from the information which he will receive from other sources.

From MAJOR C. F. PRESCOTT, Superintendent, Revenue Survey and Settlement in Guzerat, Acting Commissioner of Survey and Settlement, N.D. to the UNDER SECRETARY to the GOVERNMENT OF INDIA, Foreign Department.—(Dated Poona, August 15th, 1867.)

In the absence of Colonel Francis, I have the honour of replying to your confidential Circular of the 1st of July regarding the general feeling of the Natives of this country towards British rule, and the comparisons they draw between it and Native Government.

I will, with your permission, premise by saying, that, so far as my experience goes, the feelings of the rich and the poor, of the landed proprietors and the commercial classes, of the Mussulmans and Hindoos, on the subject, are very different.

There cannot be a shadow of a shade of doubt that the masses are in every respect more prosperous and happy in British territory than in Native States; but I doubt very much whether the rising generation (which has never experienced the bitter oppression of former days) really think so.

Even in the most prosperous districts where the people are contented, happy, well-fed, well-clothed, and with all the evidence of plenty around them, they are apt to attribute whatever is evil to the *raj*, and whatever is good, not to the *raj*, but to the *dhurm*. Any rise in prices is the fault of the *raj*; any scarcity, the same; any new taxation is not for the good of the people and the country, but only the means resorted to, to satisfy the greed of England for India's wealth.

It is the ignorance of the simplest economic and political doctrines which is their stumbling block. How can we really judge the feelings of a people who have not even the capacity to understand what the end of good government is, *e.g.*, a short time ago the Nawab of Cambay prohibited the export of grain from his territories, thinking by this means to bring down prices. All the poor people in our adjoining territory applauded the measure as a fine stroke of policy, and expressed surprise that our Government allowed a free export of grain during the whole of the season of high prices. I think, however, this feeling was confined to the low Mussulman population which seems to have no visible means of gaining a living. The agriculturists naturally enough accepted the high prices with great complaisance.

I must observe, with very great deference to Sir George Clerk and Lord Cranborne, that whether Native rule is preferred generally to British or not, my experience goes to prove that, if the poorer classes of agriculturists in the Native States under this Presidency could be made to believe *in the stability of our raj*, all who could would forsake their homes and come into our districts.

A very short time ago numbers of the Gaekwar's subjects went to the Mamlutdee of the Chicklee district of the Surat Collectorate (from the neighbouring Gaekwaree district of Gundavee) and begged to be allowed to settle there. I was there at the time, and they told me the oppression of their *raj* was unbearable. So determined were they to settle in our districts that a karbaree of the Gaekwar's was sent to reason with them and offer them terms, and it was after very considerable negotiation only that they were induced to return. The whole of British Guzerat is interlaced with Gaekwaree territory, and I have had every opportunity of mixing freely with His Highness's subjects. The people are for ever hoping and praying that some turn of fortune may bring them directly under British rule, and I hear daily complaints of oppression, unjust assessments, intriguing karbarees, and injustice of all kinds.

Those who do not know this country naturally inquire why, if there is this feeling, the people do not come to us whenever they can get a bit of land to cultivate; but those who *do* know India are well aware of the *wrench* it requires to separate a cultivator from his home, his village, his dearly-loved ancestral lands. What is oppression to him compared to the pain of seeing his fields in the hands of a stranger? The old mother says, dig up the bit of money that lies buried, and pay the exorbitant assessment; but never give up your land except with your life. The wife says, sell all we have, but don't leave your home.

The survey settlement of this Presidency has conferred on the ryots a vast property in land, and given them a security of tenure they *know* they never would have obtained under Native rule. They, therefore, to a man, love our *raj*; and it is a significant fact that, in all the Gaekwar's districts adjoining our territory, a *revenue survey* on our principle has been introduced, and is in progress, His Highness being thoroughly convinced of the prosperity and happiness of our ryots under that system, and fearing that a migration of his cultivators on a large scale into British districts is imminent.

In conclusion, I may relate (as an illustration of the discussions which are continually going on amongst the people as to the why and wherefore of certain acts of the British Government) a conversation I myself overheard between two respectable Thakoors on the subject of the Disarming Act. Said one, What does the *Sirkar* mean by disarming respectable people? Will it make us more faithful, or like the *raj* better? To this the other replied, Oh! it is not because they are afraid of us, or mistrust us, it is only because they want the *iron* to make railroads. Look (said he) that hundreds of miles of rails they are laying down, and if they don't collect and melt down all the arms they can get hold of, where is all this *iron* to come from?

From SIR RICHARD TEMPLE, K.C.S.I., Resident Hyderabad, to the UNDER SECRETARY to the GOVERNMENT of INDIA, Foreign Department.—
(Dated August 16, 1867.)

I HAVE the pleasure to reply to your letter of the 1st ultimo, touching certain opinions stated in Parliament by Lord Cranborne, regarding the relative popularity and superiority of British and Native rule in India.

Now to estimate the *popularity* of any sort of rule is to gauge public opinion. To do this in a country like India is difficult, because the people are not inclined to outward manifestation, because they are never inclined to tell us point blank what they really think, and because they are seldom well qualified to offer sound conclusions on any large or complex question not coming under their immediate cognizance. I clearly recollect the late Mr. Thomason (then Lieutenant-Governor of the North-West Provinces) once explaining to me the perplexing and conflicting replies he used to receive, even from the best informed Natives, on such general questions as the growth or the decline of the country in prosperity, and the like. He exclaimed once, "How little weight can be attached to opinions of individuals among the Natives on such subjects." I should, therefore, apprehend difficulty in *proving* any conclusion I might have on the popularity of British rule in India. I could only declare the impressions left on the mind by my own experience, and narrate such indications as may have been observable. And I fear that facts and statistics, in the strict sense, would not be available in regard to this point.

To estimate the *superiority* of British rule is a much more feasible task. But here also many moral considerations would enter in not easy of specific proof. There would, however, also be material and physical considerations on which facts and statistics could forcibly be brought to bear.

After this brief preface I shall touch on each of the above branches of the subject.

As regards the popularity of British rule, I certainly believe that it is vastly preferred to Native rule by the mass (though not the whole) of the people.

I recollect in 1851-52 being employed as Settlement Officer in the Jullundur Doab, to arrange an exchange of a number of villages (for rectification of frontier) with the Kupoorhulla Rajah. On that occasion the people of our villages that had to go over to the Rajah stoutly objected. And after the transfer had been accomplished, my recollection is that they still made their voices heard.

From 1853 up to 1860 I had various means of knowing the sentiments of the people of Cashmere. In a hundred ways I understood that the Cashmere people lamented the severance of their country from the Punjab, and its incorporation in the Jummoo State; that they felt the enviable condition of the Punjabees under British rule as compared with their own; that numbers were desiring to emigrate from Cashmere into British territory, so much so, that the Native Government was obliged to adopt stringent measures to prevent emigration; and that there was some degree of popular reproach against the British Government for having made over Cashmere to Goolab Singh. The flourishing condition of the colonies of Cashmere weavers at Umritsur, Jelalpore, and other places, is probably in some part attributable to immigrants and recruits from Cashmere itself. By the above remarks I mean no reflection on the policy whereby Cashmere was made over to an allied power, nor any aspersion on the Maharajah of that country. I merely allege that the people in that case entertained a much greater liking for British than for Native rule.

In 1864 I had to arrange for some extensive exchanges between British Nimar and the State of Maharajah Holkar. The Nimar people protested verbally in every mode and form against being transferred away from British rule. Those of the upper classes would take every opportunity of urging this.* The villagers would surround me as I marched, crying out and gesticulating in oriental fashion to give strength to their protest. This is the most salient demonstrable instance that has ever come to my notice of the greater popularity of British rule as compared with Native.

From 1863 to 1867, in the Central Provinces, it came to my notice that for many years, that is since about 1820, there had been great immigration from Berar west of the River Wurdah into the Nagpore country east of that river,—Berar being under the Nizam, and scarcely at all affected by British interference, and Nagpore being under a Bhonsla sovereign with the British Resident as regent during a long minority. This immigration must have been very considerable, year by year, causing appreciable increase of cultivation and habitation in the Nagpore country.

* One particular case was perhaps laughable. One day a chief was complaining, in a slightly unbecoming tone, that British Officers came to hunt, and caused trouble to himself and his servants. I asked him if he would like to be transferred to Holkar as there was a proposition to that effect. Instantly his manner changed. Afterwards he came and entreated to remain under us, saying that if this could be only conceded to him, he would afford every accommodation to sportsmen; that the gentlemen would be most welcome, &c., &c.

It ceased in 1854-55 when Berar became assigned to the British Government. And in succeeding years there has been a strong reflux of the tide of immigration, the Berar families settled in Nagpore returning fast to their original province. Hundreds of individual farmers or tenants, and scores of agriculturist families, have left the Nagpore villages to reclaim their old lands in Berar, causing great inconvenience to the Nagpore landowners, not only in particular villages, but in whole circles of villages. Over and over again, in reply to inquiries about this counter-immigration, have the people said that they crossed over to Nagpore because it was virtually British, and that they are going to cross back again into Berar because it is now under British management. This broad fact will be found adverted to in the fiscal and settlement reports of that part of the Central Provinces. It seems to be a strong indication of the attachment of the people to British rule.

Since 1862-3, I have been acquainted with the territory on the left bank of the Godavery, transferred by the Nizam to the British. I have always understood from the people thus newly transferred that they much preferred our management to that which they had left. Indeed this is partly shown by the rapid improvement on the British side the river in some slight degree owing to immigration from the Nizam's side, notwithstanding the great improvements of late years in the interior management of the Deccan.

In 1863 I first knew Sumbulpore, and have since been acquainted with it. That was a territory recently brought under our management. At first the people did not seem to like our rule at all better than the old system. But as soon as certain political complications were got rid of, and the people tasted of proprietary rights in land, and of assured fiscal settlements, they felt a decided preference for our plan over any other they had ever known. Among the proofs of this may be cited the extraordinary advance which that rural district has made in education largely sustained by efforts of the people themselves.

I have not much personal acquaintance with the Raichore and Dharaseo districts, which were assigned by the Nizam to our Government, and after remaining under our management for several years, were retransferred to His Highness' government. But I certainly have understood, from Officers in a position to know, that the people much regretted the retransfer, and were full of apprehension. Such I believe was the fact at the time, though they have since not had any cause to lament, for the Nizam's civil government in that quarter has been well conducted.

I have, since 1862, known of eminent cases where British authority being planted on a piece of ground in the midst of Native dominion has caused a new population to cluster round it and monied and commercial interests to nestle, as it were, under its protection. Some forty years ago, Kamptee (near Nagpore) was a little village, utterly unknown; it became the station of a British force in the heart of Mahratta territory; of course regimental bazaars and markets sprung up; but these expanded into a town which has now 60,000 inhabitants, receives annually nearly a million sterling worth of imported goods and produce, and is the most effectively rich and prosperous place in all the Central Provinces. Now I have repeatedly understood on enquiry that the foundation of all this prosperity was immigration from the surrounding Native dominions. The fort and bazaar of Seetabuldee were ceded by the Bhonslas to the British some 50 years ago; since then Seetabuldee has grown into a large town, full of artizans and monied bankers, the fundamental cause being the same as above. The same thing has occurred at Hyderabad. The ground of Secunderabad (the Military Cantonment) and of Chudderghaut (the British Residency) has for half a century been under British protection; before which period, both these places were non-existent. They have now an aggregate population of 70,000 souls. Their import trade alone must have a declared annual value of a million sterling; next after Hyderabad itself, they are the richest places in all the Deccan. This has happened under the British flag right alongside of the Nizam's capital. It is largely (though not entirely) owing to the preference of Natives for British management.

These several instances seem to tell in favour of the superior popularity of British rule.* But in order that the argument may not be one-sided, some instances may be specified which do *not* point in this direction.

In 1850 I was employed in the Allahabad district, on the frontier of the Rajah

* I have not attempted to draw any illustrations from Oude, past and present, because you will have such excellent information at hand respecting this.

of Rewah. In that tract, at that time, our rule was not more popular than that of the Rajah. The British villages had from various causes not been successfully managed. From 1854 to 1860 I had particular knowledge of the protected Sikh States, Cis-Sutlej. These are intertwined and interlaced among British districts supposed to be administered in our very best method. Yet I never knew any immigration from those States to our districts. The villages of the Puttiala and Jheend States especially were among the finest and happiest I have ever known, and seemed to be on a par with the choicest pieces of British territory. From 1863 to 1867 I have been acquainted with the British districts on the frontiers of the Native States of Bundelcund, of Sindhia, and Bhopal; and have never observed that the people preferred our management over that of the Native States. Indeed several tracts in that quarter had been unsuccessfully managed by the British, though we may hope that this has of late years been retrieved. I have recently observed evidence in the old Hyderabad records, that after 1819, when the Peshwah's dominions in the Deccan were brought under British rule, our revenue settlements were in some districts not successful, and did not compare favourably with some of the Nizam's districts. This again was reversed; the British settlements were amended; and I find some British Residents at Hyderabad reporting that the adjoining districts of the Bombay Presidency afforded, in their wealth and contentment, the best possible model to the Nizam's Government. In 1864 I passed through the Baroda territory (the Gaekwar's dominions); certainly that district, the valley of the Mhye, is in external prosperity hardly surpassed by any British district that I have ever seen at least. In the Deccan, of late years, the constitution, system, and principles of the Nizam's civil government are really excellent; this much is certain. That the result must be more or less beneficial to the country is hardly to be doubted. Whether full effect is given to the intentions of His Highness's Government, throughout the Deccan, I cannot yet say; but independent testimony is constantly reaching me to the effect of great improvement being perceptible. Judging from the published reports, I should suppose that the Native administration in Travancore must be excellent. I believe, too, that the administration of the Gwalior country, when under the Minister Dinkur Rao, afforded a fair example of what Native rule can accomplish, and that it still continues good under the Maharajah Sindhia. I have, on the whole, a favourable opinion of the administration of the Nagpore country by the Mahratta sovereigns of the Bhonsla house. There were many excellent points about their rule; but some of these were owing to the care of British Officers such as Sir R. Jenkins, Colonel Wilkinson, and others. Other detached instances might doubtless be mentioned.

Further, in justice to Native rule, it should be said that, within the century of our supremacy, there have not only been good sovereigns, who are too well known to require mention here, but also good Ministers, really capital administrators, who have adorned the service to which they belong; such are Purneah of Mysore and Tantia Jogh of Indore in the past, and Sir Salar Jung of Hyderabad, Sir Dinkur Rao of Gwalior, Sir T. Madava Rao of Travancore, in the present.*

These cases are adduced merely by way of giving my testimony on both sides of the large question which has been put. So far as they go, they seem to indicate that in many, perhaps the majority of cases, British rule is preferred by the people to Native. But this preference immediately ceases when, in any particular district, British administration falls into error, or declines below its generally high average. And certainly there are Native States, though of limited sphere, where the practical result comes out nearly as well as in the best British districts.

In this place it will be proper to state most briefly my opinion as to which are the classes among the people of India who prefer, rightly or wrongly, British to Native rule, and which are the classes who prefer Native to British rule.

Those classes who prefer British to Native rule or supremacy are, I believe, the following:—

Firstly, the independent Native Sovereigns and Princes; this is proved by their conduct in 1857 and 1858. Next after our own national prowess, one of the main causes that carried British power through that crisis was the personal adhesion of such Princes as the Nizam of the Deccan, the Maharajah of Cashmere, the Maharajah of Puttiala, the Rajah of Jheend, the Maharajah Sindia, the Begum of Bhopal,

* It must be observed, however, that both Sir Salar Jung and Sir T. Madava Rao owe very much to the training they received from British Officers.

the Gaekwar of Baroda, the Rajah of Rewa; one or two of the Rajpootana Rajahs, and others. The services rendered by them personally at that time to the British cause were simply priceless. All this is ultimately attributable to their particular preference for our supremacy. They had but too much reason to anticipate our downfall; many influential sections of their own followers were bitterly opposed to us. If they themselves had hated us, if they had really wished to be rid of us, it is not to be supposed but that some of them would have turned against us. It was because they feared the consequences of our departure, because they thought themselves gainers by our presence rather than our absence, that they held to us.

In our own territories the larger merchants and bankers, the monied and capitalist class generally, do, on the whole, prefer our rule as being the safer and steadier; though no doubt they get on very well under Native rule too. Some of the richest Native bankers and merchants are to be found at Jeypore in Rajpootana, at Indore in Malwa, at Hyderabad in the Deccan, all these places being of course under Native rule. Still these very men do, I believe, prefer British supremacy. So also in our own territories, the smaller merchants, bankers, traders, carriers, do greatly prefer our rule to any other they have ever known. Indeed it is sometimes urged, as a reproach to British rule, that either undue favour is shown, or else that undue advantages accrue to the last-named classes; however unfair such a reproach may be, still its existence shows that the prosperity of these people is a subject of notoriety and envy.

The great agricultural class in our own territories, on the whole, and with certain and occasional exceptions, decidedly and undoubtedly prefer our rule to any other. By this class are meant the members of the well-known village communities of all Northern India, the village proprietors of all Central India, and the ryots of all Southern and Western India; the ryots last named being under the ryotwaree system, much like what are called peasant proprietors in Europe. To demonstrate this broad and important proposition would require more space than can now be afforded. I should rest the proof, firstly, on the virtual or declared recognition of a proprietary title in the land over and above the possession of the same—a recognition not so fully known under Native rule as British, and greatly prized by the people; secondly, on the limitation of the State demand for lengthened periods, this limitation being much more perfectly observed under British rule than Native; thirdly, on the fact of agriculture generally (though not universally) under British rule surpassing that under Native; fourthly, on the conduct of this class during the crisis of 1857 and 1858 having been (with many large and some notable exceptions) either friendly towards us or or else passive. Had they, as a mass, disliked us, and had they turned against us, the remnant of a chance which we had at that time would have been cut off.* Further, the tenant or cultivator class (in some provinces called ryots, but inferior in status to the ryots of Southern or Western India) prefer our rule to any other. Here again the British Government has sometimes been reproached with being even too attentive to this class; unfair as such reproach may be, it tends to corroborate the notion that this class must be in a state of notorious contentment.

Some of the greater landholders, such as the Zemindars of Bengal Proper, also prefer our rule immeasurably to any other. But this preference is probably not shared by all the larger landholders throughout India, to which point I will advert further presently.

The intellectual class, fast rising into consequence, do, I believe, on the whole prefer our rule to any other. This class is in the main created by the educational efforts of the British. Their sentiments can be known from the Native Press, conducted either in the English or the Oriental languages, and in these times multiplying

* There were doubtless many grave exceptions in Oudh, in the Doab of Hindoostan, and in other places. Some of the exceptions, however, will be found more apparent than real. The Goojur villages all round Delhi rose in May 1857, not for rebellion, but for plunder; the predatory instinct being ineradicable in that tribe. I learnt on the best authority that in Rohilcund it was the Mahomedan landholders who rose, and not the Hindoos. The Hindoos, after suffering much at the hands of the Mahomedans during the interregnum which followed, sincerely rejoiced at the restoration of British authority. It has been said that the landholders in Hindoostan seized the opportunity of the disturbance to set fire to the records of the survey and settlement, in token of their dislike of those measures. This I believe to be quite a mistake. These records did indeed often perish in the general conflagration of all public offices; this was the work not of the landholders but of the incendiary mob. On the contrary, it is the fact that, though these records were burned, duplicates were for the most part forthcoming afterwards, having been preserved in the villages.

so rapidly. Certainly this class is not blinded by any partiality for us; on the contrary, they criticise us even more narrowly and severely than our own English Press does; often indeed their criticism is captious and one-sided. Still in spite of all this they frequently, perhaps generally, evince an appreciation of the good points in our rule and of all the philanthropic efforts that are put forth; and I for one should certainly infer that, however much they may cavil and carp at us, they would by no means wish to change us.

I will now mention the classes who are doubtless opposed to our rule, some of whom are necessarily our enemies, not open to any conciliation that we could reasonably use.

First of these is the priestly class, whether Hindoo or Mahomedan, throughout India. Many indeed among the Hindoo priesthood are satisfied with the State endowments assured to them by the British Government, and even appreciate the religious toleration they enjoy. But they must feel that, if British rule endures, their gradual decline, perhaps even their ultimate downfall, is only a question of time. They cannot but mark the change in the religious opinion of their countrymen caused by the national education introduced by the British. It were vain for us to flatter ourselves that the influence of this powerful class throughout India is not thrown into the scale against our popularity. Not to go too far back, I have known, even within the last five peaceful years, instances occurring, on the average about once every two or three months, of seditious or treasonable productions, in all probability emanating from, or traceable to the Brahmin priesthood. This hostility is even stronger in the Mahomedan priesthood; with them it literally burns with an undying flame; from what I know of Delhi in 1857-58, from what I am authentically informed of in respect to Hyderabad at that time, I believe that not more fiercely does the tiger hunger for his prey than does the Mussulman fanatic throughout India thirst for the blood of the white infidel. All this may be very sad, but it is no use disguising a fact which is inevitable.

Next may be noted the military and political class, comprising not only men of restless ambition, of violence, of intrigue adventurers, free-lances, marauders, loose characters of every description, but also many men of a better,* though still dangerous sort, who feel cooped up and cramped, shut out from all chance of advancement, deprived of any scope for expanding energy either through our supremacy or through our direct sway. The employment which the British Government affords, by maintaining so great a Native Army, though very appreciable, does by no means satiate or carry off all the martial ardour, still less all the love of excitement, peculiar to these sections of the population. This class is on the wane slowly,† but still, including Mahomedans and Hindoos, it is strong and numerous all over India, both in British territory and in Native States. It is instinctively opposed to the British and to their Native Allies. No doubt during the last crisis it must have sorely tried the temper of the loyal Native Sovereigns and Princes previously mentioned.‡

Further, we must be prepared to find enemies of more or less intensity among the lesser Native Princes and Chiefs; and even among some of the Chiefs and larger landholders in the British territories. This enmity, so far as it may exist, is probably traceable to a variety of causes, special to the circumstances of each case. In some cases it may be capable of mitigation or of removal, in other cases it may be irremovable. There were abundant instances of it in 1857-58, and whether it can ever be quite eradicated is doubtful.

Lastly, there is the mob, the canaille, the blackguardism of the whole population. This unfortunately great class is probably not partial to any Government. But it seems to hate the British most especially. It somehow does, in a manner very humiliating to us, attain a rank growth under our very shadow, and in the heart of our largest settlements. In a moment it would swell the numbers of our assailants; and it perpetrated many, if not most, of the atrocities in 1857. Wherever, too,

* The Deccanee Brahmins in the North and South Mahratta country afforded a strong instance of this in 1857.

† It has often been observed that the Hindoostan sepoys of these times are not like those who aided at the capture of Bhurtpore under Lord Lake, nor the Madras sepoys of to-day equal to those who defended Arcot under Lord Clive.

‡ It might here be noted that the Arabs and Rohillas, foreign mercenaries, gradually introduced by successive Nizams into the Deccan, are not indeed so dangerous as they were, but still are very powerful, and might prove a source of grave inconvenience in critical times. They are, however, diminishing year by year.

there may be any considerable populace of the lower orders of Mahomedans, there we must look for a host of brutal and irreconcilable enemies. Their animosity is the more vivid from its being quite unreasoning, as it proceeds from no cause whatever, save national antipathy or political jealousy. The mob of Hyderabad in the Deccan furnishes really an awful instance of this; from all I have read and seen of it, I cannot, in a limited space, give any adequate description of such a seething, fermenting, festering mass. In 1857 it was regarded by the then Resident as most formidable both in virulence and in numbers.

Such in brief are the items of credit and debit which I would enter in the great account of our national popularity in India. If the sum be cast up on both sides, I would fain hope that there would be found a good balance in our favour. In any general concussion of our power, the influences that would spring up in array against us might be formidable enough; but the several conservative parties in the country, guided of course by our own prowess, might suffice to sustain us.

Further, in order again that my argument may not be one-sided, I would touch very briefly on the particular points where British rule is apt to be unpopular with our people, or less popular than Native rule. Our rule is known by all to be superior in system and principle. But then we are *occasionally* prone to be sharp, or harsh, or uncompromising, in execution, though we are admitted to be for the most part steady and sufficiently patient. But there is a flexibility pervading Native rule which Natives by their idiosyncrasy like; and an inflexibility about our rule to which they can hardly be reconciled. They have an idea of our rule which we should express by its being too Procrustean. They look upon our procedures often as so many sledge hammers, or crushers, not to be withstood; whereas they know that a Native Government, even when bad, is seldom strong enough to annihilate by its stroke, and there is always a chance of parrying or avoiding the blow; thus the worst Native Governments sometimes possess the virtues of patience* and mildness in dealing with their subjects when they possess no other. In support hereof, Natives would probably adduce such instances as severe or strict inquiry into revenue-free privileges, (Enams, &c.); sale of estates in default of payment of land revenue; the enforcement of a fixed demand even in bad seasons, on the ground that there was no enhancement of demand in good seasons; the imprisonment of civil debtors; the sale of real property under decrees of Courts; the non-recognition of castes or class privileges in matters of law and justice; the imposition of legal penalties, incurred as much in carelessness or in thoughtlessness as from any intention to offend the law; the impartial, unbending, sometimes almost frigid and unsympathetic demeanour observed alike to all, rich and poor, gentle and simple; the prevention or prohibition of petty nuisances, measures which may be necessary enough for public health and order, but which many people regard as vexatious; the withdrawal from all attempt to amuse the senses or stimulate the imagination of the public, and many other instances. Now some of these things, of which the Natives seem inclined to complain, are not faults at all; some even are merits, while some are really faults which we should strive to amend. But in *all* of these and other cognate cases our practice is very different from, or the reverse of, the practice of Native Governments. In some instances perhaps the British Government may and will modify its course; in others it would not make any change even if it could.†

There are also one or two cardinal points wherein the British Government might, and probably will, do more than it has heretofore done, to the advantage of the country and to the increase of its own popularity. Last year there appeared a thoughtful article (the author is not known to me) in the *Calcutta Review* on the Native Press. It declared, on an analysis of the outspoken sentiments of their own

* This was one of the few redeeming qualities in Chundoo Lal, who was Minister of the Hyderabad State for 30 years, and who exemplified, unfortunately, most of the pernicious faults to which Native administrators are prone.

† I have consulted the Nizam's Minister, Sir Salar Jung, K.C.S.I., whose loyalty and ability are so well known, on the points mentioned in this paragraph. He said that he has for years heard every one of these topics of complaint urged by Natives against the British Government; and that some of these very things have been often urged by them against his own Government, whenever he has attempted reforms, especially judicial reforms. He said, too, that a Native nobleman, even when quite disposed to act justly and properly, always hates the notion of subjection to any law or rule, and enjoys the sense of being able to do just what he pleases. This sort of man instinctively chafes at the restraints of British rule; not because these are galling or hurtful, but merely because they are restraints.

Press, that the Natives did not really complain of some evils which we Europeans so often lament in our own system, such as corruption in our Police, inefficiency in our Courts of Justice, and the like; evils which the Natives know but too well to spring from themselves, and not to be attributed to us. But it classed their complaints under two main heads; first, that the British Government does not sufficiently associate in its administrative system the Native gentry and the more respectable classes; second, that the British Government does not allot to Natives an adequate share of public patronage, and does not promote them sufficiently to lucrative offices in their own country. The shortcoming in the latter respect was pronounced to be particularly dangerous, inasmuch as State education was rearing up swarms of intellectual men, whose aspirations would never be satisfied by the narrow field now open, and who would be compressed into discontent unless some expansion was afforded.* All this seemed to me to be but too true. In the first respect, progress has of late years been made by the gracious distribution of honours among Natives by the Crown, by the admission of Natives to the Legislative Councils, by their appointment as Honorary Magistrates, Municipal Commissioners, and the like. In the second respect, the admission of Natives to the Covenanted Civil Service; their appointment to the Bench of the High Courts; the raising the status of the Native Bar; the increase to the emoluments of the judicial employés, of the Police officials, of the ministerial subordinates, and the like, have done considerable good. But in both respects very much remains to be done. And it has been thought by many (and, as I believe, by the late Sir Henry Lawrence) that the increase of emoluments ought to be extended to the Native officers of the army.

A remark seems here called for, regarding the opinion of the Natives as to the conduct of the British Government in respect to religious matters. The toleration, which we both practise and enforce in favour of all creeds and sects alike, has always been, and is still, considered by the Natives to be one of the strong points in our position. The priestly classes do indeed recognise the ultimate and inevitable tendency of our moral influence and of the example afforded by our very presence; and they must dislike us accordingly. But this feeling does not extend much beyond these classes. In 1857, and for a short time previous to that date, an impression had been spreading that the British, departing from their old policy, were compassing the supersession of other creeds by their own. This was the fear that found vent in the celebrated cartridge case. Since 1857 this fear, though alive in the minds of some classes, seems to have subsided in the minds of the population at large. And I am not aware at this moment of any such apprehension generally existing.† Nevertheless, I believe, that Natives always have complained, and do still complain, however wrongly, of certain parts in the proceedings of the various Christian Missionaries. They do not mind the Missionaries having worship in churches, or teaching in schools. But they object to Missionaries preaching in public; they sometimes say that wherever there is a crowd in the streets, or a holiday meeting, or a gathering for a fair or a festival, there will be found a Missionary preaching; and this they regard as unreasonable and aggressive. And they add that the Government by allowing this, by remaining silent, and by protecting the Missionaries in their sacred calling, virtually affords encouragement.‡ However wrong these ideas may be, they are entertained by numbers among the Natives. And those who make the complaint are the more annoyed in that they cannot help reflecting that wherever a Missionary does preach there is sure to be a multitude thronging round to listen, which shows that whatever some Natives may think, there are many others

* On both these points also I have consulted Sir Salar Jung; he says that these complaints are of great importance; that he has known them repeated in a variety of forms and shapes, and that he heard them often discussed in the trouble period of 1857. He specified some of the honours and emoluments to which Natives may attain under their own rule, but from which they are debarred under British rule. He used to hear it asked, how it was that such foreign rulers as Aurungzebe, far more violent and troublesome than the British ever were, who did wrongs such as the latter had never ventured to do, did not excite such animosity as seemed to rage against the British in some quarters. He thought that the answer might partly be found in this, namely, that none of our predecessors ever were so utterly foreign to the country as we are; that, with all their faults they settled among, and amalgamated themselves with, the people, which we, with all our virtues, can never do. This he seems to think is the most insuperable of all the objections against our rule.

† Sir Salar Jung assures me that he is not aware of any such apprehensions now existing; he adds that the recent discussions about the Converts' Re-marriage Act (of which one case has occurred at Hyderabad) did not occasion remark in this part of India.

‡ Sir Salar Jung informs me that about no subject has he more often heard complaints on the part of the Natives against the British Government than about the public preaching of Missionaries.

of them who wish to hear the tidings of the Gospel. Herein, of course, the British Government will never make any change in its conduct. On the other hand, the Natives generally do not dislike, but rather like, to see the Missionaries teaching in schools. Whether it is that they are not at all afraid of their children being converted by the Missionaries I will not pronounce. But this is certain, that they are always won by the kindness, the courtesy, the patience, and the aptitude of the Missionaries for the instruction of youth. And thus it is that Missionary schools are always popular with the Natives.

In a matter such as the above, the British Government must of course do what it believes to be right, even notwithstanding that politically such conduct might detract from our popularity with the Natives. But I do not think that the proceedings and presence of the Missionaries do really weaken us politically; but that, on the contrary, we rather gain politically thereby. For without doubt, the self-denying irreproachable demeanour of the Missionaries of all denominations, the spirit of catholic charity evinced by them, produce a deep impression on the minds of Orientals, and raise our national character in the estimation of the Natives.

Superadded to all this, there is difference of race, religion, temperament, and disposition between us and them, which must tell somewhat against us in their estimation; though certainly, in many respects, both sides are mutually tolerant, we of them and they of us. With some classes of the people, the feeling of personal loyalty to the Sovereign is intense. I could recal many instances of this. Before me, now at Hyderabad in the Deccan, there is one of the strongest cases in point. The veneration felt for the person and office of the Nizam seems boundless. Though no Native Sovereigns in India can be more secluded, uninformed, and even bigoted, than the successive Nizams have been, yet even these Princes must have about them some kingly qualities, some tincture of statecraft, in order to inspire awe and maintain personal prestige as they have done. The British Government can hardly hope to command sentiments of this kind. It can never create the endless ties which bind a good Native Prince to his natural-born subjects. The State pageantries (Durbars), which have at various times been conducted by the Governor-General, have on the whole done much good; and the practice might be carried even further with advantage on the part of all British officials. Also Exhibitions of art, industry, and agriculture, produce an excellent effect morally and socially, irrespective of their material effect. On the other hand, I doubt whether the agricultural and rural classes in the interior have much, if any, sentiment of this kind. They have for ages been habituated to obey the ruler of the day; they perceive keenly enough the difference between a good ruler and a bad one, and they regard him according to his conduct rather than the prestige or traditions attached to him.

Again, the overshadowing and universal character of our rule and supremacy operates prejudicially to our popularity. While the renowned English Company was one out of many competitors in the field of conquest, while it was struggling with others for existence, it had its followers and adherents who fought under it, and clung to it faithfully. When it succeeded in one quarter after another, its adherents rejoiced that they had sided with it; all men courted it, and sought its friendship. But when that success spread, and gradually enveloped the whole Peninsula, then all men began to fear and to wonder whom the conqueror would devour next. From the day that the British Government became the acknowledged Paramount Power in India, a new kind of danger, not previously felt, came into existence. This was predicted at the time in the Metcalfe despatches and in Malcolm's reports on Central India, in language that now reads almost as if prophetic. It was never fully realized till 1857; though most formidable, it was not insurmountable, for it was, under Providence, actually surmounted.

The State education in India has caused, and is causing, among other things, a vast diffusion of geographical knowledge and to some extent of political information. In hundreds of thousands of schools the boundaries of France and of Russia, the situation of America, and the like, are being taught daily. In thousands of schools, even further instruction is afforded, wherefrom some notion, however dim, will be formed of the relative resources of the Great Powers. In the event of any future European war or complication seriously involving Great Britain, we must be prepared for the people of India having a far nicer appreciation of the crisis than they have ever before had on similar occasions. This need not necessarily tell against us; it might even tell for us; but were it to militate against us, then we

might apprehend a combination of intrigue, of influence, or of overt resistance, on the part of all the dangerous classes already described, with a rapidity and effect greater even than in former disturbances.

In justice to ourselves, it must however, be observed that at all periods there have been individual British officers of the highest position and the widest influence, who have exactly seen which tendencies in our system would prove dangerous, which peculiarities in the national character on one side would be distasteful to the Natives, and which idiosyncracies on their side would alienate them from us. And these eminent persons have always striven to apply a sedative or corrective process, and their example must have often smoothed down difficulties. Such men in the past were Shore,* Mountstuart Elphinstone, and Metcalfe; or Munro, Malcolm, and Henry-Lawrence. In the present time there are of course many such, and it may be hoped that there always will be in the future.

Before quitting this part of the subject, I would just note the points which Natives most admire or wonder at in the British political character. Their respect for our physical power and energy is too obvious to need remark. But besides that, they generally recognize in our countrymen certain qualities which they believe themselves to be not possessed of, and which contribute to render us, in their estimation, almost invincible. These opinions may be summed up thus. They think, firstly, that we have an aptitude for combination, for obedience to general discipline, which in time of danger or emergency makes us all of one mind ("ek-raee," as they phrase it); secondly, that we have a spirit of enquiry, of always being on the search for matter of practical moment ("tuhqueeq-o-tufteesh," as they phrase it); thirdly, that we have a sagacious farsightedness ("doorundeshee," as they phrase it), which causes us to shape our conduct with an ultimate aim, not fully perceptible to Orientals; fourthly, that we have a heedlessness ("be-purwae," as they phrase it) in a high sense, that is, a heedlessness of danger, labor, trouble, separation from home and family, and countless other inconveniences, whenever any important end is in view.†

I now come to the second division of the subject, namely, the superiority of British over Native rule. It must be to this that you allude when you speak of the concentration of statistics from all parts of India. Herein I would base my conclusion mainly on the demonstrable prosperity of the people.

On this head it is probably not necessary to advert to many of the most obvious features of civilization created by the presence of the English in India. Such are the barbarous customs abolished; the external order introduced; the many kinds of crimes repressed; the extraordinary system of registration of lands and tenures throughout the Peninsula, in elaboration probably not surpassed at any period or in any country; the thousands of miles of roads constructed, or of railways opened; the hundreds of miles of canals; the network of electric telegraphs; the many millions spent by the Government on Public Works; the many more millions of British capital invested in the country, and the like. These of course would never be lost sight of if any complete comparison were to be instituted; and they could not have been secured without British rule.

As to general statistics, I am not in a position to afford them being here at Hyderabad in the heart of foreign territory. But the figures of the trade of India are immediately available to you, and what better statistical proof can be had than this? This trade is increasing in value by scores of millions in every decade, and will ultimately be computable by hundreds of millions. It arises mainly from British rule and from the British connexion. One remarkable benefit which India receives from British rule, and which she could not have received to anything like the same extent under Native rule, consists in the vast amount of her produce which England takes off her hands, whereby an immense market for her industry is opened, and whereby the culture of many important staples has either been introduced or augmented, to an extent which would not have been attained under any save British rule. Such are cotton, sugar, fibres, oil-seeds, tea, coffee, indigo, and others.

In connexion with this, the wonderful growth of the three Presidency cities might

* Mr. Shore's notes on Indian affairs contain one of the most searching and severe analyses ever made of our shortcomings in this country.

† Sir Salar Jung, in reference to this reminded me of a pointed speech to this effect made by the late Nizam to General Low in 1856, adding that this speech correctly interpreted the Native idea.

be adduced; Bombay having a population of something under a million souls, and Calcutta and Madras something under half a million each, the aggregate of the three being probably about one million and three quarters. These several centres are entirely created by British rule. They represent not a localized prosperity, but an industry and wealth which permeate the whole country. It is for the sake of the Calcutta sea-port that the Ganges and the Brahmapootra are crowded with fleets of boats, and that the floating cities of boats at Serajgunge and Naraingunge up-country do really exist. It is for the sake of the emporium at Bombay that the cotton agencies are spread all over the villages in the interior of Central India.

I fear that you could not obtain statistics generally of increase of population and of agriculture, though both must have increased much in many places. In many, even most, parts of India, sufficient care was not taken at the outset of British rule to secure a census of the population. If such measures had been adopted in the beginning, their results would now be infinitely valuable for comparative purposes. In the North-West Provinces, which were among the first to set an example in this respect, the last census shows that there has been a slight decrease in population since the troubles of 1857. Before that period, the population was increasing. As it is, however, a great increase of cultivation could be statistically proved. Probably similar proof could be obtained for the Punjab generally. I understand that some striking instances could be found in the Derajat and other parts of the Punjab Trans-Indus frontier. Oudh will so readily suggest itself to you that I need not allude to it further. In Bengal Proper there certainly has been a great increase; whether this could be statistically proved I am not sure; but it could be shown in general terms, and especially in such districts as Mymensingh, Jessore, Backergunge, and the 24-Pergunnahs. In Madras and Bombay the revenue survey records will show specifically great increase of cultivation. In the Central Provinces the settlement reports of the Nerbudda Valley (the Hoshungabad district particularly) will show that most of the wonderful wheat culture now visible has either sprung up or been resuscitated during British rule, the country having been formerly ruined by a lengthened period of Native misrule. In Berar the astonishing rise of cultivation during the few years of British administration is shown by the figures of our annual reports. The rapid growth of British Burmah is attested by the facts recently published in the *Gazette of India*.

On the other hand, I do not know of any case of permanent diminution, either in population or agriculture, in British territories, to set off against the numerous cases of increase. There have of course been temporary losses from famine and calamities, but these are always repaired. Thus it is reasonably demonstrable that there must have been very considerable increase of population, agriculture, and commerce under British rule. This increase is greater far than any growth which has occurred in Native States in the same period, or than would have occurred had the territories, now ours, continued under Native rule. However good the Hindoo rule may have been before the advent of the Mahomedans, or however well the Mahomedans may have managed in some places, and in some times, yet there can hardly be a doubt that Native rule had been getting worse and worse during a long period preceding the establishment of British power; and had become absolutely bad, not only here and there, but in a large proportion of cases. This is the way in which the ruin of ancient works of public utility—a ruin so often spoken of as visible to this day—did really occur.

As a proof of the depth to which Native rule did sometimes descend, I would refer to passages scattered all over Malcolm's Central India, and referring to most parts of Malwa; also to the papers about Nimar printed by the Government of the North-West Provinces. Of course Sleeman's reports on Oudh will readily suggest themselves to you. I see from the Hyderabad records that the Balaghaut Ceded Districts (Bellary, &c.) had suffered terribly from misrule before coming into our possession. The records of the Lahore Secretariat will furnish many tragical particulars of outrages at Bhawalpore and Mumdot on the Sutlej. If required, I could produce from the Hyderabad Residency records a terrible crop of evils and abuses during the last half century, consisting of street fights with great loss of life, of insolent oppression by foreign janissaries, of sanguinary contests between neighbouring landholders, of overt unabashed venality, of persistent peculation, and of extraordinarily audacious crimes, though happily these things are of the past and have during recent years been ably remedied. Again, judging only from the published accounts and not from any personal knowledge, I believe that some very sad instances have

occurred of late years in one or more of the States of Rajpootana. Without the least desire to disparage Native States, I think it is necessary to advert to these matters if any comparison is to be made. Without at all denying that some evils may and do occur equally under British as Native rule, it may be affirmed that these particular flagrant evils above described do *not* happen under British rule, and that territories on coming under us are always immediately freed from such evils.

Further, the almost invariable increase of the public income, which has occurred in each successive province annexed to the British Empire, may be adduced in favour of British rule as compared with Native. The assumed revenue of each province was given at the time of the cession, and will be found doubtless in the records of the Indian Foreign Office. Now, if you were to compare the *then* revenue thus ascertainable with the *present* revenue, easily ascertainable, you would, I believe, find that in Bengal, of which the "Dewanee" was made over to Lord Clive, in the Hindoostan districts ceded by the Nawab Vizier, in the southern districts taken in charge by Sir T. Munro, in the Peshwals' districts made over to Mountstuart Elphinstone, in the Punjab country taken from the kingdom of Runjeet Sing, in the Burmese districts shorn from the Empire of Alompra, there has been a great progressive increase of the State income. In most cases the British officers begin in the same way; they repeal many Native taxes; the land tax which they retain they assess lower than before; by degrees they put on a few taxes of an indirect character; the ultimate result being great fiscal gain. The profit partly arises no doubt from fiscal skill, but it is in a large degree attributable to the flourishing state of the people under our system.

I would here add three instances within my recent knowledge. The Hyderabad Assigned Districts were made over to us in 1861 at an estimated value of 32 lakhs (320,000*l.*) annually. Their total public income, including general revenue and local funds, now stands at Rs. 62 lakhs or 620,000*l.*, showing an increase of 93 $\frac{3}{4}$ per cent. in seven years. The Central Provinces, more than half consisting of recent acquisitions, had in 1862 an annual income aggregating something over 80 lakhs or 800,000*l.*, whereas they have now something over 120 lakhs or 1,200,000*l.* The Balaghaut Ceded Districts (Bellary, &c.) had at the cession a declining and broken down revenue which was hardly thought at the time likely to cover the cost of the subsidiary force; they have now Rs. 53,52,060 or 535,206*l.*; so notorious is the fact of great increase in the latter case, that the Nizam himself has more than once reminded us of it during the course of territorial negotiations.

Under British rule the prices of everything, necessities and luxuries, have advanced steadily; of late years, too, with a progressive ratio of speed. In many, if not in all, parts of the country, wages have risen, not always proportionately, but still very much. In some few districts the peasantry have outrun the working power of rural goldsmiths in the demand for ornaments; it is ordinarily believed that every peasant has buried coin under his hearthstone; in some instances, there are stories of ryots making a plough, or a cart-wheel, of silver, by way of boast: these stories may be exaggerated, but their currency shows the bent of popular opinion. In many, perhaps even most, districts full evidence could be obtained to the effect that the people are better housed and better set up than in former days; better furnished, too, with all domestic utensils, so much so that it is a common saying that the earthen vessels have been converted into brass vessels. I know, on the other hand, no instance of permanent decay in any broad area or district under British rule; famines and other calamities occur, but the districts recover. In any European country the rise of prices perpetually advancing is held to be a proof of national prosperity. The same proof is applicable to India. Now this has happened under British rule to an extent never known in any preceding period, and of which Native rule affords no examples.

Though the British Government has been at infinite pains to perfect its judicial system, still the most thoughtful of its officers are hardly satisfied with the result, but as a test of growth in wealth, the increase of litigation, both as respects number and value of suits, may be adduced. If you can obtain the figures for even some of the Indian provinces many years back, and compare them with those of the present day, a remarkable result would probably be adduced, indicative of material progress in India under British rule. For our more recent acquisitions, especially the Non-regulation provinces, this point can be conclusively made out.

By the exertions of the British Government, European medical science has been largely diffused throughout India, and will be still further diffused. Hereby much

physical benefit has accrued and will continue to accrue more and more. Also sanitation, both in theory and practice, is being carried on throughout the British territories. It may not have yet advanced much beyond the stage of infancy; but it is already accomplishing great things. In no respect is the external contrast between British and Native rule more remarkable than in the aspect of great cities. Let the cities and towns in the interior of India under British rule be compared from a sanitary point of view with what they once were, or with what similar places still are under Native rule, and then some idea can be formed of the material advantages which British rule (despite admitted shortcomings in this respect) does really confer on the urban population.

I would not lay too much stress on the introduction of English piece goods among the whole people of India (which is, however, a cardinal fact), because it gradually extinguishes many indigenous manufactures. It is of course most beneficial nevertheless.

Nor would I urge too strongly the prosperity of the monied classes under British rule (though this is also a large fact). For I find that this class flourishes greatly under Native rule. Sometimes the abuses of a bad Native government foster unduly this very class, by borrowing money and forestalling the revenues. In the worst days of the Hyderabad State the bankers enjoyed an inflated and unnatural prosperity. Of late years this has been reduced as a consequence of improved government.

I would not make too much of the very large and increasing sum expended under British rule by the Natives for public improvements and for charity. This good practice existed and exists largely under Native rule.

The above considerations point on the whole to the superiority of British over Native rule in respect to the material and physical welfare of the people. The following considerations will point to its superiority in respect to moral progress.

Primarily the efforts of the British in India, in the direction of national education, have been really vast of late years. Even, if in a discussion of this sort, it be not permissible to advert to religious considerations, still the teaching and educating power of the Protestant Missionary bodies of all denominations, as proveable by statistics, amounts to a mighty agency. Evidence of the great change passing over even the religion of the people at such places as Calcutta, Bombay, Benares, within the last quarter of a century is, I should suppose, readily obtainable. In the southern parts of the Peninsula the organization of the Roman Catholic churches is truly wide-spread; some of those facts might be stated without difficulty. The noble results of Protestant Missionary enterprises among the Karen population of Burmah have been too recently before the public to require any further allusion here. Now all these moral benefits are, under Providence, owing to British rule.

State education was extremely weak and backward (even if it existed at all) under Native rule. It has, of late years especially, been brought out with powerful auspices, and on a large scale under British rule. Let the number of schools and scholars, either maintained, assisted, or inspected, by the agency of the British Government throughout India, be counted up and totalled. The result, however far it may fall short of the needs of the population, will yet be appreciably great and *pro tanto*, it will be a proof of the moral superiority of British over Native rule. No Native Government would ever have thought of or compassed an undertaking of this magnitude.

Native literature, whatever it may have been in the olden time, had languished, had well nigh died out, for a long period before the introduction of British rule. Now, although in these days there is still a want of *original* native literature in India, still literature of a certain sort is becoming rich and abundant. Let the number of Native newspapers now published in India, of native educational works brought out annually, the literary works published annually by Natives, be even approximately counted up, and then some estimate can be formed of the mental industry, the intellectual efforts among the Natives as stimulated by our system. Let the returns of books annually sold to the native youth in the many provinces of India be collected; and then the diffusion of knowledge may be somewhat understood. Here again, these results are owing to British rule.

Thus I make out that, despite shortcomings admitted to the full, British rule in India is demonstrably superior to Native rule. If this be truly so, then we may be sure that the Natives do, on the whole, like it the better of the two. When they are well off, they are certain sooner or later to know it in their hearts, though they be not externally demonstrative. National prejudices are strong with some, or with

many perhaps; but with the mass these will naturally yield to self-interest. In *part* (but not whole) proof of the greater *popularity* of our rule, therefore, I would allege its indisputable superiority.

I am not without fear that this letter may be too long, and may fatigue the Viceroy. But I have endeavoured to state my evidence for His Excellency's information as well as I could on this somewhat complex and difficult question.

OBSERVATIONS by COLONEL H. D. DALY, Officiating Political Agent, Gwalior, on the Method of Government pursued in Native States, with a few references on the Estimation of the System of British Administration in India by its people.—(Dated Gwalior, 21st August 1867.)

The State machinery of Gwalior has been modelled on that in force in British territory. Courts of Law, Justice, and Revenue are separately constituted. The regulations for the guidance of these Courts and the general administration were compiled by Dinkur Rao, and embody in simplicity the main principles of our own system.

2. During Dinkur Rao's Dewanship this machinery was administered with an attempt at purity. That period exists no longer.

3. The Maharajah is paramount in all matters of State, and exercises control in every Court. No material award is passed on any case without his sanction, which is more dependent, it is generally believed, on His Highness's estimation of the individual concerned, than on the merits of the matter at issue.

4. If a party in a suit, civil or criminal, shall have sided with Dinkur Rao during the mutiny, his fate is sealed. For him there is neither justice nor compassion. This is so well understood in Gwalior, that when Dinkur Rao visits the capital, scarcely does a man of note dare to recognize him.

5. The Court of Appeal from the Courts below is presided over by the Dewan and Pundit Hirnath. The Dewan is old and feeble. The Pundit keen and unscrupulous, educated in an English school; he is familiar with our language and habits. He was Dinkur Rao's Secretary and in his confidence; his present high position is mainly due to the betrayal of that confidence.

6. In 1861 Hirnath was deprived of the Naib Dewanship by the Maharajah for extortion committed during an investigation into a dacoity, and his associate, named Moolchand, was imprisoned for six months in the jail, or so sentenced. A Court in which Hirnath is the working authority needs no description. It is said that it is not unusual for a party in a suit to secure the fiat of the High Court before the case has been even disposed of by the Court below.

7. Moolchand, the accomplice in the extortion, has been lately appointed Kotwal of the capital, an office of emolument and trust.

8. The Appeal Court is held twice a week in the Dewan's house; in important cases the place of assembly is the Maharajah's Palace.

9. Stamp fees are levied in various stages of a suit, and form a handsome item in the treasury receipts.

10. I will illustrate the value of the Court's decrees when execution only remains. A few days ago I observed an old man with a paper waiting for me in a verandah, which is unfrequented by servants or chupprassees. His joy at thus seeing me alone was tearful; he thought his long anxiety at an end. The tale was this: Months ago, after a lengthened struggle and heavy expenditure, he obtained from the Court of Appeal a decree for Rs. 1,200 and upwards against a man in his employ. After waiting in vain for execution, finding petitions to others of no effect, he carried one on illuminated paper to Agra for the Viceroy at the last Durbar. The other day this was returned to him with a memorandum or endorsement by the Under-Secretary, Mr. Wyllie, consigning the petitioner to the Political Agent. Thus the poor worn-out old man thought his cause won. After hearing the tale of his trials I asked, "Is yours a singular case?" "Singular," he shouted, "there are hundreds in my position." Of course I failed in making him understand that the chief was the referee in matters arising out of his own Courts, and that the Political Agent was prohibited from interference; but he knew how utterly hopeless was his case.

11. The foregoing would be incomplete without a remark or two upon one who, from behind the scenes, greatly sways in Gwalior. This is Lalla Sheollee—Scindia's

own newswriter—a few years ago a small trader in Delhi, now one of the rich men of the Lushkur; his emissary is in every office; no official escapes him; the Police posts are under him; every Soobah and men greater than Soobahs pay him tribute.

12. Colonel Sutherland, Resident of Gwalior, remarked in his tour in Malwa in 1837 that Native Governments fear to trust their officers with power: the superior is watched by the inferior. Time has brought no change in this respect. Should the Sirsoobah, or Governor of the Province, intercede to prevent extortion or oppression on the part of the Soobah, the latter, who is always in direct intercourse with the Court, reports that the interference has prevented the realization of the revenues: the order goes forth for the Sirsoobah to desist. Thus the Sirsoobah is helpless, for he can neither appoint nor discharge an Amil.

13. On the other hand, should the Sirsoobah fraternize in the work of spoliation, as was done in Esaghur three years ago, and the oppression wreck the revenue, the Maharajah is no longer deaf to the cries. He made a tour through the district people thronged to his camp; petitions were piled in heaps. Inquiry ensued; the guilt of the Sirsoobah was established, and his suspension ordered, with a heavy fine for the benefit, not of the stript ryots, but of the Maharajah's treasury.

14. A Revenue Soobah is rarely discharged for fraud or oppression. Should the receipts of his district show symptoms of weakness, he is suspended and ordered to the capital there to be put through the sieve. Time rights this, and he is given a fresh field. Scindia himself thinks little of a man being detected in fraud or bribery. He does not conceal his opinions on this point that to remove a servant for such a cause is but to give another opportunity of doing the same. Then, again, Soobahs who have made money, readily pay money, contract for nuzzuranas, &c., and prepay the amount.

15. Colonel Sutherland, in 1837, described Esaghur, Bhilsa, and Malwa as desolate and miserable. Thirty years have brought no change for the better. Travellers still go armed to the teeth, and in many places the man at the plough has a sword by his side. Traders going from village to village are not safe without an armed Bheel or Sondia.

16. To men accustomed to see districts under British rule such a statement must seem fabulous. It is necessary to live and move in Native States to know the nature of the system under which they exist.

17. The comparison, between their method of administration and our own is as St. Giles' to St. James'.

18. What is understood by Government in civilized countries has no place in any Native State unconnected with us so far as my experience and knowledge go. In Europe it is said that happy accidents occur in despotisms. Such accidents are unknown in the East; there is neither security of person nor property. Men are seized at the instance of any man in power, imprisoned without charge, discharged without trial. There is no record of mortality. Death by foul means would only excite inquiry in the event of money being forthcoming to prosecute it; more money, and the question is stifled. These things are well known. Petitions have often reached me setting forth false imprisonment: murder unnoticed.

19. A Political Agent has no authority to institute inquiries into such matters; probably the State makes no returns to him of crime or casualty. If in a friendly manner he moved in a case laid before him, every effort would be used to stifle his purpose.

20. I may here remark that Scindia himself views his own administration as infinitely superior to that of any other Native State; as he does everything himself, he considers everything done well. The fullness of his treasury is his test of successful administration, and no official changes or receives a post without paying nuzzurana, and no doubt the amount of this has great weight in settling the candidate's suitability.

21. As to the comparative estimation by the people at large, and whether their prosperity and contentment are best promoted under British or Native rule, what, let me ask, would cause greater dismay in districts which for years have been under us than the announcement that they were about to be transferred to a Native State—Scindia or Holkar for instance?

22. Political Officers who have lived amongst Chiefs and Thakoors under our guarantee know well the effect of such a threat; whatever the contumacy, it is succeeded by extreme humility; for well they know, without our intervention, the sunnuds they hold are worthless. During late years circumstances have rendered it desirable to effect exchanges of land between the British Government and Scindia:

our endeavour has always been to maintain the rights intact of those transferred by us with their land. The Governor-General's Agent well knows the failure of these efforts and the distress which ensues—wails break forth of confiscations and broken pledges. Within the last few days petitions, which I know to be true in their purport, have reached me on this point; but I have never known an instance of discontent on the part of a ryot transferred by the Durbar. He has got a fixed lease or settlement in lieu of fixed uncertainty.

23. It has been said that where the frontiers of Native States intermingle with those of British territory, people pass from our border to theirs, but not from theirs to ours. With a class no doubt this is true. Wherever there is much intermixing of frontier lines, predatory bands, hereditary dacoits congregate; their livelihood, from generation to generation, has been plunder. The people amongst whom they live seem to sympathize with them; for, under a Native Government, resistance to their depredations would be useless. From the chief there is no hope; the marauders pay black mail to him for their footing, and no village official is without a share of the spoil which is gathered from afar. When British rule closes on such frontiers, these tribes pass over to the protecting State. This is the class whose tastes lead them to quit the land in which their occupation is gone; but time, when it carries with it order and security, is too much even for these lawless gangs, as is seen in the North-West and the borders of the Terai. Broad tracts which, a few years ago, were given over to dacoits and wild beasts, are now quickly tilled and dotted about with comfortable villages.

24. I have already made these observations longer than I ought to have done, but the subject bursts with fullness. Let me cast a glance at Malwa. What has caused Scindia's cities of Ojein and Mundisore year by year to lose wealth, importance, and population? Mundisore is in the very heart of the poppy fields, on the banks of a noble river; yet many of its streets are in ruins and its name is declining. Ojein, that ancient city, venerated by all Hindoos, with the Seeptra flowing by its walls and rich land around, is crumbling to the ground and being yearly deserted by merchants and men of business. Scindia's Naib Dewan, in his report of his late tour in Malwa, describes villages in ruins and much plundering and desolation.

25. On the other hand, why are Rutlam and Jowra, comparatively insignificant States, increasing in wealth and prosperity? *Because it has chanced to them to fall under British protection.* With the last 40 years, through the heirs of both States being infants on accession, the supervision was assumed by Major Borthwick, one of Malcolm's assistants. Rutlam was then in a small way, what Mundisore is now, losing importance. Borthwick delivered over his charge when the time came. Rutlam, a busy handsome city, filled with merchants and traders, prosperity everywhere, in the treasury and in the villages, for he had made a land settlement which gave contentment to the people.

26. After the lapse of a few years, Rutlam again passed into the hands of a child of two or three years old. During the interval dissension and dissipation had destroyed much that Borthwick had built up; the bazar had lost its fullness; but under British guardianship, during the last three or four years, more than the old prosperity is reviving. This time the Superintendent (Shahamut Ali) is a Native of Hindoostan; he has visited Europe, and is a scholar and administrator of no mean attainments. His hard and fast line may not be ours, but in a troubled position he has worked wonders during his supervision. Cultivators and traders press to Rutlam from other Native States.

27. Jowra, 40 years ago, was little more than a village. Under Borthwick's fostering care, it became a city with a rich and well supplied mart. When he made over his charge, the young Nawab so carefully maintained all that had been inaugurated, that Jowra continued to increase in prosperity. About two years ago this Nawab died; his heir is a minor, and thus the State has again fallen under British protection. The administration is carried on by the late Nawab's minister, under the supervision of the Political Agent. It has now a bazar second only to Rutlam. Order everywhere prevails, and the air of contentment which possesses the people strikes every passer-by.

28. Again, Sillana; this small State, during the minority of its present Rajah, fell into our management. The Superintendent, for some years, was the same Shahamut Ali, who is now at Rutlam. When he took charge debts were heavy, and disorder was in everything. During his guardianship, the debts were reduced four-fifths; the revenues put on a footing which brought the old inhabitants back to their calling, and Sillana itself was greatly restored from its ruins. Traders and borahs settled

there. Such was the condition of affairs when the State was made over by the British Superintendent to the young Chief. Since that a few years only have passed, and what is now the condition?

29. Sillana is being deserted; cries everywhere rise up of oppression and plunder. Engagements to ryots are broken. Lakhs of debt have been accumulated. So heavy was the burden that the Rajah laid his affairs before the Political Agent, and sought his advice. His ryots and traders are passing to Rutlam and Jowra.

30. The Governor General's Agent knows better than I do the utter want of confidence amongst Natives at large in the promises of any Chief—great or small. I will, however, give an instance in point. About Goonah, where I was for some years, scores of square miles of rich land belonging to petty Rajahs are waste. The Rajah of Bhadowra invited my assistance in obtaining cultivators. I spoke to Sikh pensioners of the Central India Horse and others about to take pension, men always greedy for land, and suggested that they should settle and form villages. The idea thoroughly chimed in with their inclinations, *on one condition*, that I should counter-sign the engagement between them and the Rajah. Without this, despite his liberal offers of years of free tenure and a sunnud, not a man would risk his savings or discuss the question.

31. Scindia has long felt the same in many parts of Esaghur, &c. His offers are tempting, but there is no reliance on them. He is too proud to seek or accept our guarantee, which would bring hundreds to till the rich ground. It is to be hoped that our guarantees will not increase, for the end is disorder and confusion.

32. I will conclude with extracts from a Report of Colonel J. Sutherland, 1837-38, when Resident of Gwalior, than whom there have been few Officers of more varied experience. He was a man of great benevolence, the avowed friend and supporter of Native States. In Rajpootana, where he was Governor General's Agent, his name is held in veneration. After a lengthened tour in Bundelcund, Malwa, Berar, &c., he thus describes his entrance in British territory:—

"We had again, in the Baitool district, an example of the benefit conferred on the people by British rule, and of the estimation in which it is held. Taking it all in all, it is very gratifying to anyone interested in the permanent prosperity of our rule to witness the comfort and tranquillity which reign throughout this poor and remote tract of country, to hear the inhabitants ascribing these things to the justice of our Officers, and the moderation of our Government."

He goes on to prove that the advantages of British rule have been more appreciated in these districts and those of Nimar than in many parts of India, and for the same reasons.

"We found in them no upper classes; no cities in the enjoyment of wealth and luxury through the expenditure of a Court, so that our administration has been one of unmixed benefit to all. The people are conscious, from an experience of twenty years, that our system, by whoever administered, will continue the same. Under Native rule, a breath raises them up or casts them down. Accompanied as I am by persons little accustomed to British rule, and whom it is my daily duty to reproach on the badness of their own, I confess that I have no little pride and pleasure in pointing to a happy tenantry and well-cultivated fields, and hearing them confess that the people have no cause of complaint; that this is so no one can suppose, but that it is so by comparison with the people of those countries through which we have been travelling I have myself no doubt. When at Agra last year I told a Native gentleman, Mir Alum Khan, an inhabitant of the Nizam's country, who had resided the greater portion of his life there, but who had also lived much in camps and travelled through Persia and Arabia, to compare the condition of the different classes under our rule with that of the corresponding classes under Native rule. He told me that our rule was particularly calculated to protect and render prosperous, in as far as prosperity can be their lot, three great classes of the community,—the merchant, the agriculturist, and the labourer—and these he allowed were the great majority of mankind. But he said it was destruction to the gentleman who ought to live at home at ease; and the interests of the few he considered of greater importance than those of the many—they were of his own order."

From J. H. MORRIS, Esq., Officiating Chief Commissioner, Central Provinces, to the UNDER SECRETARY to THE GOVERNMENT OF INDIA, Foreign Department.—(Dated Nagpore, August 23, 1867.)

I HAVE the pleasure now to reply to your "confidential" letter of the 1st July.

If the people of an Indian province be divided into five classes, namely,—

- The nobility and courtiers ;
- The commercial class ;
- The land-holding and land-occupying class ;
- The labouring class ;
- The religious class ;

then we must perhaps admit that the first and the last of these classes have material cause for regarding British administration with disfavour. The nobles have no lucrative or honourable posts to look to, such as the headships of great State departments, the governorships of provinces, the command of armies. In a Native State there are always a number of offices of this kind: some of them are hereditary; nearly all of them go to members of the local aristocracy. With us a Rajah (such, for instance, as the ancient Gond talookdars of the Nerbudda Valley) may, if he manages well, keep out of debt, have a flourishing estate, be an Honorary Magistrate, and keep on good or even friendly terms with British officers. But his local influence and importance are far less than attach to the nearest Tehseeldar, who perhaps began life as a clerk on Rs. 10 a month. Then, again, the cadets of old families like these have, or think they have, no choice but to vegetate on the scanty pittance which the head of their house can allow them.

With the courtiers who have survived a Native court the case is perhaps even harder. The provision made by the British Government for the people of the old Nagpore Court was extremely liberal, yet it is quite sad to see how swiftly and surely these people drift into debt. A few of them were appointed Extra Assistant Commissioners, and they got on at first tolerably well, but they could not keep up with the requirements of our system, and they retired. Sir R. Temple did what he could to bring forward some of the younger courtiers as Tehseeldars. But as yet these men have not adapted themselves to our system. Some of the sons of these courtiers, however, are likely to do fairly well.

The religious classes must be worse off than they were under Native rule. The most they can hope for from our Government is the continuance, in whole or in part, of the regularly recognized assignments they formerly enjoyed. They cannot now get large annual gifts from royal ladies, or rich grants by the bequests of dying kings. The Native nobles and courtiers who used to maintain them are themselves more or less straitened. Education is beginning appreciably to spread; freethinking is becoming more common; superstition is in some places being lightened. All these changes, however desirable in themselves, must lessen the revenues of the priestly classes.

As for the labouring class, its members very rarely give any thought to the Government under which they live. Nor is their daily life, or their means of living, much affected by the Government. The people of this class look very little beyond next day's dinner; they live and they work, and they eat and they die, and they can do all these things under either the British Government or a Native Prince. Perhaps it is easier for a labouring man to move about and carry his labour to the best market; perhaps his day's wages may be a little larger and a little surer in a British province than in a neighbouring Native State. But their food is perhaps cheaper in the Native kingdom. And a coolie may there be as dirty as he likes; he may live without interference in the middle of a marsh, or over a cesspool; whereas in a British town he and his must conform to a number of petty sanitary laws. Men from the labouring class do occasionally raise themselves. And for such people the path of advancement is as easy and less irksome under Native rule. Perhaps a poor weaver can now be more sure of enjoying the full proceeds of his toil than he could have been in Nagpore 20 years ago. But then he bears in mind that in the times of the Bhonslas country fabrics were worn by every one, from the Rajah to the sweeper; whereas now, not only is *Juggernathee Kapra* (long cloth) largely worn, but he is undersold by cloths made at Manchester looms in exact imitation of what he himself used to turn out. Men of this class do not as yet appreciate the advantages we hold out to them, such as education, medical treatment, justice, police, facility for travel, and the like.

There remain two classes—

- The commercial and
- The agricultural.

The commercial classes are certainly better off in British than in Native provinces. They will allow this themselves; the success of this class is indeed in the eyes of a portion of our subjects one of the reproaches to British rule. For a few years after annexation, in a place like Nagpore, the merchants may feel the loss of the lavish expenditure of a Native Court; but everywhere else the commercial classes thrive better under British than under Native Government. Perhaps it is unnecessary to say anything more upon this point. There are no statistics available to show that merchants and dealers actually make larger earnings than they did under Native rule. But it is quite certain that they enjoy their profits more, possess them more surely, and spend them more freely than before. Formerly (I say *formerly*, because it seems fair to compare British administration with the old Native Governments, rather than with the existing Native administrations to which the heaven of British fairness, order, and public spirit has spread) a banker, whatever he earned, lived poorly lest he should tempt the rapacity of some official. Now Native merchants live well, dress well, wear jewels, drive carriages, endow schools, build ghâts, construct temples, and in fact enjoy their money to the fullest extent.

Lastly, there is the agricultural class; they are the most important class of all; and in some provinces of British India they have derived as much material benefit from British rule as any class. They fully appreciate the immense benefit which the British system confers upon them in the shape of certainty of tenure, and fixity, as well as moderation, of demand. Take the case of the Nagpore province; it had triennial revenue settlements, and at each settlement some five or six per cent. of the landholders either were evicted from their lands, or else had to give them up from inability to pay the enhanced Government demand. In those times the proportion of the rents and village profits which went into the pocket of the landlord was about 10 per cent. or even less. Now, even at the outset of a 30 years' settlement, the landlord enjoys at least 30 per cent. of the village profits. The freedom from transit duties when he takes his produce to market; the liberality with which Government advances loans (without interest) *tuccavee* for improvements; the additional means of getting from place to place;—all these advantages are much appreciated by the people. There are some few features of our revenue and general administration which even this class dislike: such, for instance, as the punctuality so strictly enforced in payments of land revenue; the frequent visits of chuprassies for sanitary, statistical, and other purposes; some of them perhaps dislike the influence brought to bear to make them educate their children. In a word, they fail to appreciate our constant desire for speedy progress, moral and material; they would prefer to be let alone. Then perhaps the inflexibility and stiffness of our judicial system is, for a generation or so at least, irksome to them. And lastly, the law of land sale (as Mr. Kaye calls it) is in the eyes of the landholding classes a real grievance.

Still, notwithstanding all these fancied drawbacks, the balance would be in favour of our revenue system, even when weighed against the better-managed Native systems. I fear that I cannot give actual figures in proof of this; but I can at any rate adduce instances where the two systems have in effect been weighed against each other by a large body of landholders and occupiers:—

1. As Settlement Officer of Mooltan, I can recollect how very much our system then was preferred to that in Bhawalpore. And I can remember how the farmers of Bhawalpore used to try all they could to get a holding in our territory.
2. The influx of tens of thousands of the agricultural classes into Berar since it came under British rule, and the immense rise in the value of land there, is very patent to us, who are divided from Berar by the River Wurdah only.
3. So far as I can learn, an exactly opposite result has taken place in the Raichore Doab. And when I was travelling in the west coast some years back, I heard very much of the loud expressions which the petty proprietors of that tract gave to the dislike at being transferred to the Nizam.
4. The Upper Godavery talooks came to us in 1860-61. Already about 9 per cent. have been added to the population there by immigration alone, and the extent of cultivation and the wealth of the district has proportionately increased.

5. In 1850 A.D., two Pergunnahs, which had formerly belonged to the Jeytpore Rajah, and had been under British management for some time, escheated, and they were attached to the Dumoh district. In 1859 one of these Pergunnahs (Simurea) was given to the Punnah Chief for his mutiny services. The landholding classes made a great outcry at the time, saying what wrong had they done that they were to be handed over to Punnah. About two years ago one of our settlement officers had occasion to cross this Pergunnah in going from one part of Dumoh to another. And numbers of the landholders came to his tent, telling him of their unhappy lot; how they held on only a five years' tenure; how some of them were evicted; how they had to pay extra taxes, such as "foujkhurch," and the like; how that an extra benevolence had been exacted from them when there was a marriage in the Rajah's family, and the like.
6. The Bijeragoghur Pergunnah has only recently become British territory, and a few villages of that tract were given in jagheer to the Nagode Chief in reward for his mutiny services. These villages are now Nagode territory. And the malgoozars complain—in their intercourse with the Settlement Officer at least—of the misfortune which has befallen them. They say that they have no security of tenure, and they have to pay all sorts of extra taxes. In their figurative language they said they had been handed over to Nagode to have their throats cut.

I believe that instances of this kind might be multiplied. At the same time it is only fair to say that this feeling is not absolutely universal. There has been for some years an impending exchange of territory with Holkar, which will involve the transfer to the Indore Durbar of two or three Nimar Pergunnahs. So far as our officers can judge, the people of those tracts feel no dislike at the prospect of re-transfer to Native rule. Again, many of our Nerbudda Valley landholders also own villages in Bhopal or under the Gwalior Durbar; and they always speak with respect and contentment of the treatment they receive at the hands of the Revenue authorities there.

On the whole, then, it may perhaps be claimed that the agricultural classes enjoy greater material advantages—and acknowledge that they do so—under British than under Native rule. Indeed, I hardly think it would be possible to find anywhere in the world a more prosperous community than the petty proprietors of the (ryotwaree) districts of Dharwar, Ahmedabad, Tanjore, and Berar, than the whole agricultural body in the lightly-rented districts of the Punjab and the Central Provinces.

Your letter under reply asks for statistics, and I am now offering little more than general statements. But I know of no statistics showing the production, earnings, and profits of the various classes in any Native State, so I have been unable to give every arithmetical statement of the material position of Native and British subjects.

I would, however, add that, if British rule in India is to be weighed in the balance, it should not be found wanting until full weight has been given to sundry other considerations besides its comparative material benefits conferred, or the comparative estimation in which the two systems are held by Natives. Native rule prevents, while British rule permits and encourages, advancement. Even the Bhopal State takes the highest possible land-tax, prohibits the export of grain, and refuses to make roads. But the administration of Bhopal, of Travancore, of Puttiala, of the Putwurdhuns, of Gwalior, would not be what it is if it were not for the example and influence of the paramount power. The influence of our Residents, the example of our governments, the competition of our provinces, compel Native States to maintain order, to administer a sort of justice, to curb exaction. Add to this, that if there were no strong paramount Power, some one or more of the provinces of India would always be torn by wars of the kind we have recently seen waging in Afghanistan. Material progress of any kind must utterly and entirely cease in the presence of warfare of this kind.

MEMORANDUM by COLONEL A. FYTCHE, Chief Commissioner, British Burmah, and Agent to the Governor-General, on the comparative progress of the provinces, now forming British Burmah, under British and Native rule.—
(Dated Rangoon, August 23, 1867).

It may be premised that the following paper has been drawn up on the understanding that *data* should be furnished showing as clearly as possible the material progress of British Burmah under British Administration, as compared with its condition under Native rule, or with the condition of existing neighbouring States and Powers; and that no discussion or argument is desired as to the popularity of our rule, or the advantages which it may possess, except so far as these are to be assumed from the statements indicative of the comparative progress of the people under our Government.

2. British Burmah affords means of drawing a fair comparison between British and Native Administration, because it has in immediate contact with it as a Government the very power from whose dominions the province was obtained. In 1826 the provinces of Arrakan and Tenasserim were annexed to the British territories from the Burmese Power, still leaving to the King of Ava the whole of the northern portion of his dominions, as well as the important province of Pegu, formed of the lower portion of the valley of the Irrawaddy River and its delta. We thus obtained possession of the least productive portion of the Burmese Kingdom, while the King retained the magnificent lands of Pegu, with the valuable outlet of Rangoon, to which point foreign trade had solely been drawn.

3. A reference to the map will show that the province of Pegu was fairly interposed between the newly-acquired districts, in a position easily to withdraw from them both population and trade, provided Native rule had proved more attractive to either. These conditions, then, seemed to furnish a fair test—only that the presumption was in favour of the Native dynasty in virtue of its holding a far richer and more accessible country.

4. As it is required that the endeavor to compare the result of British and of Native rule in these countries is to be made on specific data, it is necessary to select some one element of advancement as a standard, from which can be deduced the many numerous conditions which go to make up material progress. If this be not done, the comparison must spread out into an examination too minute and extended to be satisfactorily disposed of within a reasonable compass—and the difficulty is increased from the impossibility of obtaining in detail the items which constituted the revenue, taxes, and trade of British Burmah previous to our occupation, in such a shape as would enable individual comparison with the fiscal arrangements now in force.

5. In the east there is probably no better general test of the advancement of a country than the rise or fall, the ebb or flow, of its population. A steady increase in the population indicates in fact a prosperous people, a firm and stable Government, and an absence of oppression. It produces, especially where the proportion is not in excess of the capabilities of the soil, extended cultivation and increased trade. If then it can be fairly shown *that* the population of the provinces composing British Burmah has increased at a rate which far exceeds the numbers to be obtained from natural increase, and must be attributed to immigration; *that* in one instance where the locality whence the immigration was drawn became British, the exodus ceased; while the flow from Native States into British districts more accessible continued; and *that* where detailed statistics are available, it will be seen our frontier districts have increased at the highest ratio, then we may conclude that British administration in Burmah has proved its superiority over Native rule. In British Burmah the population returns are fairly reliable, because they are susceptible of easy check from the Capitation Tax in force in these provinces. This tax is levied from all male adults, and the revenue received therefrom,—actual money paid into the treasury at fixed rates per head, has shown a proportional increase, corresponding with the rise in population.

6. It is well known that when Arrakan and Tenasserim first came into our possession in 1826 they were almost depopulated, and were so unproductive that it was seriously deliberated whether they should not be restored to Burmah. The following figures will show how much these apparently unprofitable acquirements prospered under our administration.

7. In 1826 the province of Arrakan, with an area of 18,630 square miles, had a population of only 100,000 souls; these were the indigenous population. In 1835 this had risen to 211,536, of whom not more than 6,000 were foreigners. In 1845

the population numbered 309,608, an increase of 50 per cent. in the decade, and in 1855 reached 366,310, or 15 per cent. in the decade; but in 1852 Pegu had become a British possession, the effect of which was immediately felt in Arrakan, still the total increase in Arrakan during the 29 years was 250 per cent. of the indigenous population, or an average of 50 cent. in each decade.

8. Now, turning to Tenasserim, we find that in 1829, three years after the annexation, the population in a province with an area of 28,000 square miles was estimated at a little over 70,000 souls. In 1835 it had risen to 84,917, or 21 per cent. in six years. In 1845 to 127,455, or 50 per cent. in the decade. In 1855 to 213,692 or 69 per cent. in the decade. In other words, it had increased by 200 per cent. in 26 years. The actual increase in the home population of England and Wales (after the loss from emigration) has been about 12 per cent. in each decade of the last 50 years.

9. To support the above returns, we will give the statistics of revenue and assessed cultivation during the same period. The revenue of Arrakan, which in 1826 was 23,225*l.*, rose as follows:—In 1835 to 52,832*l.*; in 1845 to 68,455*l.*; and in 1855 to 127,729*l.* The area of assessed cultivation, commencing in 1830 with 66,227 acres, advanced in 1835 to 133,952; in 1845 to 233,769; and in 1855 to 353,885 acres, while the value of the entire trade in the same year amounted to 1,876,998*l.*

10. In Tenasserim the first year's revenue in 1825-26 was 2,676. In 1835-36 it had risen to 33,953*l.*; in 1845-46, 52,525*l.*; and in 1855-56 had reached 83,300*l.*, while the total trade amounted to 836,305*l.* Land under cultivation was not assessed by area in the earlier years of our occupation, and we have no returns on that head until 1843, when 100,657 acres were assessed. This in 1845 had increased to 119,869, and in 1855-56 to 181,681.

11. Now, from 1826 until 1852, these provinces of Arrakan and Tenasserim had, as a competitor both for trade and population, the Burman territories, with a frontier of some 800 miles, across which our subjects were free to go, as far as we were concerned; but not free to come, because the Burman authorities strongly opposed emigration, and put serious obstacles in the way of any of their people migrating to our territories. Yet the immense increase of population shows that very large numbers were attracted to our rule.

12. As to the trade, there are no reliable data available to show what it could have been under Burmese rule for, say, the half century before we occupied the provinces; but we know from the absence of any seaport towns of importance, and from the small number of vessels which ever visited these provinces from other countries, that at the time they came into our possession, there was scarcely any external trade at all. During the years, however, which have now been described, Maulmain, in the Tenasserim provinces, became from a fishing village a city of 60,000 inhabitants; and Akyab, in Arrakan, similarly sprung into existence and reached a population of 20,000 souls.

13. So far has been traced the progress of these provinces up to 1855, but in 1852 the province of Pegu, including the rich delta of the Irrawaddy, had been annexed to our territory, the three provinces eventually forming British Burmah; and we have brought the older two provinces up to 1855, because from that date a carefully prepared statement of the statistics of the whole three provides a ready reference on all points of their material progress, as well as because in the first few years of our occupation of Pegu, the returns are necessarily not so reliable as when the administration was completely organized.

14. Pegu came into our possession in 1852, with an estimated population of 500,000 souls, and an area of 33,400 square miles, or a ratio of 15 persons to the square mile. In 1855 it is returned at 631,640 souls, or nearly 19 to the square mile. It will be remembered that Arrakan, commencing in 1826 with a ratio of 5½ persons to the square mile, had risen in 1855 to a ratio of 20 persons; and Tenasserim, from a ratio of 2½ persons in 1829, had increased to 7 persons per square mile in 1855. But it would seem that in the beginning of the century the population of the true Burman Empire (that is, Upper Burmah as now constituted, Pegu and Martaban) was estimated by various authorities at from 20 to 23 persons the square mile, and if this were the general average it may be concluded that the fertile province of Pegu containing the valley of the Irrawaddy, with that river as the highway from the seaport town of Rangoon to Ava, the Capital of the Empire, must have had a higher rate than the remainder of the country.

15. But taking the population of Pegu at 23 persons the square mile in 1826, we can then compare the position of the territories, British and Native, after 29 years of mutual contract, thus :—

				1826.	1855.			
				Population.	Population.			
NATIVE	-	-	Pegu	-	769,120	-	719,640	
BRITISH	-	-	{	Arrakan	-	100,000	-	341,310*
				Tenasserim	-	70,000	-	213,692
TOTAL				-	-	939,320	-	1,274,642

Now we know that the gross increase in Arrakan and Tenasserim in these 29 years was 385,000 souls, from which, allowing the natural increase during that period to have been 75 per cent. on the original population, we may deduct 127,500 on that account, and this will leave us 257,500 souls as the emigration from Pegu and the other Native Burman States into British territory ; and if we compare Pegu (including Martaban) fairly estimated in 1826 with Pegu (including Martaban) even in 1855) three years after it came into our possession, during which period its population is believed to have risen from 588,000 to 719,640), we find it with nearly 50,000 less population at the latter than at the former period. This is an astonishing result, when placed against the immense progress of the British territories in its immediate neighbourhood.

16. The very scanty ratio of population to area which it is believed Burmah has, within historical periods, always had under Native rule, is almost certain proof that the actual natural increase is very low, or rather has been very low, yet it has very great capacity for supporting human life ; and we have been able in tracing the British occupation of Arrakan and Tenasserim, far less productive countries, to provide for a natural increase in them of 75 per cent. in 29 years, and even then have a large surplus population. Had Pegu, during the same period with its greater advantages, increased at the same proportion, it should have been possessed of a population of more than 1,000,000 souls when it came into our hands. Instead of this, we find its population to have retrograded, and there can be no reasonable doubt that the people who should have enriched the Native State were drawn into British territory.

17. Having thus brought up these provinces to 1855, we shall now trace their progress since that period. The province of Pegu, as has been said, came into our possession in 1852 ; but making allowances for the distressed condition of a country after a campaign, and for the imperfect returns accidental to a newly-organized administration, we may pass over the years up to 1855, and from that date commence our deductions.

18. Now, as to the province of Pegu, it faces with a perfectly open frontier of (say) 200 miles, the still existing Burmese territories under the King of Ava, so that it is fairly pitted against the possibly superior attractions of Native rule. From our territories any subject of ours is free to move into Upper Burmah whenever he desires, whereas there is a steady opposition shown to any emigration from the King's dominions into ours. So strong is this that when families of cultivators wish to cross they are frequently obliged to do so by stealth at night, bringing possibly their cattle and carts, but abandoning their houses and much property. They send intelligence constantly to our Police Stations on the frontier to announce that they are coming, asking at the same time that a guard may meet them on the frontier to protect them from the pursuing Burmese officials ; and again and again are our Police Stations flanked by the camps of whole villages who have bodily moved into our territories and taken shelter there until they had selected their future fields.

19. In the face of these difficulties, then, we find that Pegu, first a separate province, now a division of British Burmah, had in 1855 a population of 631,640 souls, which in 1865 had risen to 1,350,989, that is, had more than doubled itself in ten years, the exact increase being 113 per cent. The proportion of population to area had increased from 19 to 40 per square mile. If we allow a natural increase of 25 per cent. during the decade in question, we may deduct 157,910 on that account ; and 20,000, the number of foreigners, from 719,349, which is the total gross increase ; and these deductions will leave us an immigration of the indigenous population into our territories of the enormous number of 561,439 souls in the 10 years from 1855 to 1865.

* Not including foreigners.

20. Further, if we look to the increase of individual districts during the same period, it will appear that their ratio of increase is strangely in accordance with their propinquity to foreign territory, and their consequent facility for absorbing emigrants. Thus the Prome district, which in its northern aspect forms our frontier in the valley of the Irrawaddy, has increased its population by no less than 156 per cent. in these 10 years. The Tounghoo district, which is our frontier in the valley of the Sitting (also facing Upper Burmah), has had its population augmented in the same period 115 per cent. The Myanoung district, which adjoins Prome to the south, shows an increase of 81 per cent. The Bassein district, which has drawn, as will be shown hereafter, from Arrakan as well as Upper Burmah, has raised its population by 113 per cent. While the Rangoon district, which is the most southerly and removed from our frontier, has increased by 70 per cent. in the same decade.

21. The population returns from the other two divisions extending over the same 10 years, 1855-56 to 1865-66, fully support the conclusion that they formerly drew their additional population from Upper Burmah and from Pegu so long as it was under Native rule, and that when the latter came under British administration the transfer ceased. Thus intercommunication between Arrakan and the Pegu Division is comparatively easy along their mutual boundary, but when we reach the Northern Frontier of the Pegu Division, running athwart the valley of the Irrawaddy, then the passage from Upper Burmah (Native) above that line to the Arrakan Division is one of considerable difficulty; in fact the Aeng Pass is the only really feasible route leading through the broad range of mountains there separating Arrakan from Burmah Proper. We have shown that while Arrakan under British administration had to compete with Pegu under Native rule, its population increased at an average of 50 per cent. each decade;—but when it has Pegu under British management, as its neighbour, and physical obstacles prevent a supply being drawn from Burmah, as has been the case from 1855-56 to 1865-66, we find the population has only increased from 366,310 to 414,640, or 13 per cent. We have already pointed out that the Bassein district of the Pegu Division, which immediately adjoins Arrakan, has, during this period, increased 113 per cent., and this is probably in some degree due to the reflux of those who had, while Pegu was under Native rule, moved into the Province of Arrakan. Tenasserim, on the other hand, has many routes by which she can draw population from the Native States, and we find that in the period from 1855-56 to 1865-66, this division has increased its population from 254,605 to 430,551, or 68 per cent., a decennial rate as high as any it had attained since its occupation.

22. The foregoing data seem to have established beyond any doubt that, during the whole period of British administration of the provinces of Arrakan, Tenasserim, and Pegu, they have, in addition to an allowed natural increase of population, far higher than we have any historical authority for supposing they ever reached under Native rule, withdrawn and absorbed enormous numbers of people from the neighbouring Native States, which may be summarized as follows:—

Into Tenasserim and Arrakan	1826 to 1855	-	-	257,500
„ Pegu from	1855 to 1865	-	-	561,439
„ Tenasserim from do.	do.	-	-	113,295
Total				<u>932,234</u>

23. Now, looking to specific marks of material progress, to see whether they support the conclusions we would wish to draw, we find that in the Pegu Division during the decade, 1855-56 to 1865-66, the area of assessed cultivation has increased from 539,808 to 991,102 acres, or 83 per cent.; customs from 56,281*l.* to 151,088*l.*; the total revenue from 297,753*l.* to 646,462*l.*; while the entire trade rose from 2,143,100*l.* to 7,300,224*l.* These results fully bear out our argument that increased population and increased prosperity in a country situated and constituted as Burmah is run hand in hand together.

24. Tenasserim also in the past decade has progressed satisfactorily, in accordance with the increase in its population. The assessed area has risen from 181,681 to 273,289 acres; customs from 7,796*l.* to 13,517*l.*; the total revenue from 106,609*l.* to 193,566*l.*; while the entire trade has increased from 836,305*l.* to 1,712,307*l.*

25. Arrakan, on the other hand, shows the effect on her prosperity of having a British instead of a Native administration to contend with as a neighbour. It has been indicated already that physical obstacles stand between Arrakan and Upper Burmah, which do not, and did not, between it and Pegu. We have given the

rapid increase in the population and prosperity of Arrakan up to 1855, but in the decade, to 1865, there is a marked falling off. Assessed lands increased from 353,885 to 377,012 acres; revenue from 127,429*l.* to 190,032*l.*; while trade has fallen from 1,876,998*l.* to 1,395,580*l.*

26. We have hitherto been concerned only to show the undoubted fact that the countries under British administration have possessed advantages so manifest to the population of neighbouring Native States that a steady emigration from them into our territories has continued ever since our Government was established among the Indo-Chinese nations. The original ratio of population to area being very low, while the life-supporting capacity of the soil is very high, this rapid increase of population has produced a remarkable progress in all the elements which go to make up the material prosperity of the country.

27. And when we look to those Native powers which have been our competitors during this period, the picture is reversed. In the dominions of the King of Burmah, including the tributary Shan States, we find everywhere signs of progressive decay; a discontented people abandoning his territory; a decreasing revenue; the area of cultivation lessening yearly; and the weakness of the Government shown in the rebellions and outbreaks which so regularly occur. During this year (1867) had it not been for the rich granaries of Pegu, that supplied Upper Burmah with rice, a famine would have succeeded the Civil war which raged last year. The Natives of Upper Burmah themselves indicate truly the process now being undergone by the British and Native dominions. "Here," they say, "in British Burmah, your villages are becoming towns, but with us in Upper Burmah our towns are becoming villages."

From Lieutenant-Colonel W. F. EDEN, Agent, Governor-General, Rajpootana, to the UNDER SECRETARY to THE GOVERNMENT OF INDIA, Foreign Department—(Dated Mount Aboo, August 23, 1867.)

I HAVE duly received your demi-official Circular of the 1st ultimo, asking for an expression of my opinion as to whether, in the estimation of Natives, the system of British administration in India possessed any superiority over the method of government pursued in the Independent States.

It is, I conceive, a proposition quite incontestable, and one admitted by every educated and unprejudiced Native who has had opportunity of forming his own conclusions, that our system of administration is incomparably more just, more efficient, and, in most respects, superior, to that which obtains in Native States. For the first time, almost within the annals of Indian history, a government has been established with its foundations laid on broad principles of toleration, equity, and wisdom, in which the wants and rights of the middle and lower classes,—the bulk of the population,—receive just and impartial consideration, in which the rich and powerful can no longer trample down with impunity the poor and the weak, and in which life and property have stronger safeguards than the capricious will of despotic and irresponsible rulers. And I most decidedly concur in the opinion of His Excellency the Viceroy that the masses of the people in British India are more prosperous and more happy, though they may not always realize the fact, than their fellow countrymen living under the sway of their own chiefs.

To show that the superiority of our mode of government is generally admitted, I cannot do better than mention an answer which every Political Officer must have received times beyond number, when suggesting reforms to a Native Chief or his ministers. The soundness and wisdom of the proffered advice and counsel is rarely questioned, but it is urged in reply that a measure of folly, short-sightedness—nay, more, of misgovernment, must be expected in a Native State; in fact, that it is the mere nature of things that it should be so, and that we must not anticipate their administrations to come up to the standard of our own.

Whilst, then, I have no personal doubt as to the solid advantages accruing to our subjects, I cannot say that the popularity of our government is in proportion to those advantages; and the causes are obvious to those who have studied the effects of foreign domination. As very truly remarked in your letter, we are so alien to the population in colour, religion, and every other characteristic,—so great a gulf divides the governors from the governed,—that it would be unreasonable for us to expect the same measure of popularity as accrues to a good Native ruler, or even to a Chief whose administrative merits do not rise above an absence from great vices.

When we seek to comprehend the sentiments of the masses, we must place ourselves on their standing ground ; we must remember that they are ignorant, childish, and superstitious to a degree,—creatures whose thoughts and ideas merely flow in a current of traditional habit and custom, trammelled on all sides by caste,—that they are in the main incapable of thinking for themselves, and, like all Asiatics, carried away by ostentatious pomp and display.

To these classes many of our legislative measures, which are expressly intended for their welfare, are incomprehensible and irksome: they would prefer to move along the path trodden for centuries by their forefathers, rather than be troubled with measures of reform and progress, which, in their first stage, are generally accompanied with some little personal sacrifice. Feelings such as these will wear away as education extends ; presently, however, they do obtain, and are the natural results of an administration far advanced beyond the understanding of the bulk of the people.

Further, the populace miss, in our government, the pageantry and display exhibited by Native Chiefs ; and there is also wanting that bond of sympathy between the rulers and those ruled, which is created by a common belief, and by association in religious customs and festivals to which the masses are so much attached. In fact, a Native administration has to a Native a warmth and geniality, if such terms may be applied, as compared with our government, which, although admitted as more just and equitable in all respects, strikes him as cold, hard, and unimpassioned,—better suited for an educated race born under a northern sky.

There is, too, unquestionably a strong and natural tendency amongst Natives, long subject to our rule, to forget the tyranny and oppression under which they suffered from the despots of their own race ; whilst, on the other hand, the petty annoyances of our administration are constantly before their eyes.

To the upper classes, to the priesthood, as well to the bold, ambitious, and unscrupulous, our government is certainly more actively repellent. Power, they feel, they have little or none, and there are but few, if any, careers open to them by which they can obtain it. The soldier can rise to the command of a troop or company ; the civilian can advance to the post of “Sudder Ameen,” but at these points their hopes must rest content. Since 1857, however, a more liberal policy has been introduced, and, as stated in the Annual Report of this Agency for the past year, the grant of civil and judicial powers to members of the upper classes in Oudh, the Punjab, and elsewhere, and the general improved status in which they are held, has done much towards attaching them to our rule.

In conclusion, I would record that, in spite of the popular feelings above referred to, I am firmly convinced that, if the sense of the people could be taken, there would be found a great preponderance in favour of the continuance of our authority to its transfer to the hands of their own countrymen ; and it is, moreover, very certain that when, in the fullness of time, we do withdraw from the Government of British India, our name will be revered, and that our empire will be cherished and remembered as a golden era in Hindoostan, which closed in centuries of anarchy and misrule.

From R. N. CUST, Esq., C.S., Member of Board of Revenue, North-Western Provinces, to the UNDER SECRETARY to THE GOVERNMENT OF INDIA, Foreign Department, Simla—(Dated August 24, 1867.)

I HAVE the honour to reply to your confidential of July 1st, requesting my opinion whether the assertion of Lord Cranborne in the House of Commons that the system of British administration in India possessed, in *the estimation of the Natives*, no superiority over the method of government pursued in the Independent States, is supported by fact.

2. Among others, I read this assertion of Lord Cranborne with astonishment, and, as he can have no personal knowledge on the subject, wondered who were his informants.

3. To arrive at a sound opinion, it is not sufficient to have served one's whole career in the British Provinces, or in the Native States, as the judgment becomes influenced by habit of thought. I began my career in the Protected Sikh States, the very tract alluded to by Sir G. Clerk, and as the Punjab was annexed, I advanced, thus coming into contact with the decaying, but not extinct, principles and elements of Native Government. I traversed the whole of the Punjab during the first year of annexation, visiting Cashmere while on intimate terms with the

sovereign of the country. At another time I was intimate with the politics of the petty Bundelcund Chiefs. The subject of the respective merits and demerits of Native Governments has constantly been under my consideration. During my furlough I visited Turkey in Asia, with a view of ascertaining whether any system of governing Asiatic nations in a respectable Asiatic way could be discovered.

4. I freely admit the many blots and blemishes of our anglicized system; the over centralizations; the influx of inferior Englishmen; the crushing of all Native talent and enthusiasm by virtually closing the higher ranks of office against them. These are blemishes much easier to point out than to suggest a remedy for.

5. I am on principle opposed to the annexation of a single province or country to our already far-too-extensive dominions; on the contrary, I would, in a systematic process of adjusting boundaries, make over, with the consent of the people, some outlying backward tracts to the more respectable Native States on condition of good government.

6. I admit that the hungry class of Native officials, who long for a lazy easy life, as members of a do-nothing Durbar, or petty rulers of fat districts, would greatly prefer the re-introduction of the Native system; but I doubt very much whether the owner and cultivator of land and the better commercial and manufacturing classes would entertain the same preference. A feeling of nationality might incline them in that direction, but when it came to the point, I doubt if they would vote for Native annexation. In this opinion I am confirmed by Sir Dinkur Rao, who tells me that if the people of Agra were annexed this year to a Native State, they would be sorry for it two years hence.

7. I cannot but think that the worst type of an English-governed State is preferable to the best-governed Native State; the English system will probably improve, and at any rate endure some little time; the Native system, if good for the moment by the accident of one good ruler, will relapse in a few years to a worse state by his demise or expulsion.

8. In a Native State, there is no fixed legislature; no Courts of Justice; little attempt at education; no complete religious freedom; no certain property in land; no public opinion; no enlightened commercial principle; not one of the civilized conveniences of life. I can remember the late Rajah of Puttiala, in many respects an enlightened sovereign, and afterwards a member of the Council of India, considering it a grievance to have a Post Office opened in his chief town. Other States tolerate infanticide, but punish severely the slaughter of kine; other Chiefs refuse to have the dense jungle cut, or to open out roads. The late report on the political administration of the Central India Agency is full of suggestive statements. If any chief ever had the opportunity of qualifying himself for his high position, it was Maharajah Holkar, and yet we find that, in that large kingdom, there is no written Code, and that decrees of Judicial Officers are reversed at pleasure by the Chief.

9. Such Books as the "Punjab Chiefs" lately published at Lahore, and Colonel Sleeman's Book on Oudh, are suggestive of the comparative advantages of the Native State, even when sufficiently large and rich as to enable the Sovereign to entertain proper servants of the State.

10. Since the annexation of Oudh it is known as a fact that hundreds of cultivators who had migrated from that province into an adjacent district have flocked back to their Native villages from Shahjehanpore, Jounpore, and Allahabad. This certainly suggests in some degree the estimation of Natives of the comparative advantages and disadvantages.

11. And if the opportunity of rising to high stations under Government is denied to Natives under British rule, more than reasonably it ought to be, it must, on the other hand, be remembered that *Government service is not everything*—is not the only outlet for genius, education, and industry. It is stated to be a misfortune for a country to have a small place under Government considered the *summum bonum* of the youth. But under British rule a career is opened to the merchant, the manufacturers, the lawyer, the landed proprietor, and the contractor, and numerous other honorable and lucrative professions.

12. If we cannot make an attempt to give India as good a government as lies within our power, we had better take to our ships. What would be said in Europe if we allowed India to be governed on low principles as a kind of "culture-enterprise," such as the Dutch maintain in Java? We must act up to our lights, and to the genius of our institutions. I have heard the Penal Code abused; but if we are to have a Criminal Law at all, it is as well to have one based on sound principles, and set out with logical accuracy.

13. In Europe, India and the English rule have become synonymous. Is nothing to be said in the cause of morality when a comparison is made between the two systems? Those who, during the last twenty years, have seen the Augæan stables of the Palaces of Delhi, Lahore, and Lucknow, emptied and exposed to public gaze, may perhaps doubt as to the excellence of pure Native institutions. Let the Pension List of a newly annexed province, such as the Punjab, be examined, and the varieties of licentious, adulterous, and incestuous connexions be considered, the issue of which have to be provided for. Let the trail left behind an extinct Native State of courtezans, fiddlers, astrologers, priests, dancers, and still lower grades of infamy, be examined. In the last census of these provinces, two thousand eunuchs are reported; perhaps in the next decade, owing to the extinction of the palaces of Delhi and Lucknow, this wretched class may cease to exist.

14. And it is in vain to say that Delhi and Lucknow are exceptionally bad, where all depends on the accident of one irresponsible ruler, and there are no recognized principles, all may be equally bad. When there is the happy accident of an honest and able minister, the fate of Dinkur Rao and Salar Jung is always to be anticipated.

15. I do not, in conclusion, admit that, in the estimation of right-thinking Natives, or of Natives who are able to form an opinion at all, there can be a general well-grounded preference for a Native State of the ordinary type; nor do I think that, after admitting all our shortcomings, there can be any doubt as to the vast superiority of the British system, and I write this without any object but that of recording my opinion on the eve of leaving India for ever.

NOTE by Colonel R. J. MEADE, Governor-General's Agent, for Central India, on the General Question of the Opinion entertained by the Natives of India, as to the Superiority, or otherwise, of the System of British Administration of India, over that which obtains in the Independent States—(Dated Indore Presidency, August 24, 1867.)

I CANNOT conceive it possible for a moment that any unprejudiced person, who has had the opportunity of observing the system or method of Native Government, as practised at the present time, and of comparing it with that of the British Administration of India, could seriously attempt to draw any comparison between them in favour of the former.

2. The general principle on which the British system of administration is based is the establishment of law and order within its limits, its object being the security of life and property therein, and a sincere desire to do the greatest good to the greatest number of its subjects, and to act justly towards all.

3. The principle of Native rule is essentially different, being based on the will of the Chief, who is bound by no law but that of his own caprices, and who regards his subjects and their property as wholly at his disposal.

4. In the British territory, the law is supreme, and all, high and low, are subject to its authority. It is administered by officials whose integrity is unquestioned, and whose proceedings and judgments are, as a rule, regarded with respect and confidence; though it is not to be denied that there are many points in connexion with the practices of the Police, and the lower class of Native Omlah, and also the Procedure in the Courts, which are believed to be at times productive of much oppression to those affected by them, and which, though checked by the higher Officers to the best of their ability, render this branch of the administration less popular than it might and ought to be.

5. In Native territory there is no fixed law or procedure; where rules or regulations for the guidance of the Courts and State officials have been issued by the Chiefs they are but little attended to, and are wholly disregarded by the ruler himself, a pleasure.

The judicial Officers and all the State officials are, as a rule, underpaid; and are, with but rare exceptions, thoroughly corrupt, and the decisions of the former command neither confidence nor respect.

In fact, there is no such thing in any Native State with which I am acquainted as an "administration of justice" properly so called. Decisions and decrees are given, but the instances are rare in which they have not been more or less influenced by corrupt causes; and their due enforcement or execution is, as a rule, almost wholly dependent on the exercise of further influences of the same nature; while there are, in all Native States, individuals and classes exempt from the jurisdiction of the Courts,

and against whom injured parties have, practically, no means of redress, and the ruler at pleasure annuls or suspends the proceedings that have been taken in any case in which he takes a personal interest, or is influenced to such a course by those around him.

6. In the British territory the revenue system is based on fixed and equitable principles. The assessment on the land is light, and the proprietors and cultivators are secured against all demands or oppressive exactions of any description whatever in excess of such assessment.

The rights of property in the land are carefully defined and protected, and every encouragement is held out to landholders to improve their estates, the value of which is thus continually increasing, while the extension of cultivation has been immense, and is still progressing.

7. In Native territory the revenue system—except in some few States in which there has been an attempt at imitation of that in force in British territory—is of a far different nature.

The assessment on the land is much heavier than that levied in British districts, and the landholders and cultivators are liable besides to all sorts of further demands and exactions from the State farmer, or revenue or other officials, which there is no resisting, and for which there is no redress, but which are most oppressive, and greatly impoverish the class they affect.

The right of property in the land is not generally recognized, and where it is so in a modified form, the holder has no security whatever against the arbitrary proceedings of the Chief or his officials, which may at any time, on any pretext, deprive him of his lands and reduce him to penury.

Hence there is no inducement to the class of landholders to invest money in the improvement of their holdings, or to other parties to undertake the reclamation of unowned and depopulated tracts, and the result is seen in the enormous extent of uncultivated land of the best quality in many Native States, which is allowed to lie waste, and is turned to no account whatever.

8. In the foregoing observations, I have remarked on the chief points of difference in the British and Native administrations which doubtless affect the mass of the people more than any others; and if they alone were to be taken into consideration, the immense superiority of the British system, and of the results it secures to those subject to it could hardly be questioned.

9. But there are many other points which form prominent features in the British system of administration, and are essential to the progress, the comfort, and the convenience of the people ruled by it, which are either wholly wanting, or are but faintly or imperfectly imitated in Native territory.

10. Such are—

The construction of roads and communications, and the other Public Works carried on at the cost of the State;

The provision and diffusion of the means of education, and the encouragement the Public Service affords to those who qualify themselves by suitable study and preparation for employment in its various branches;

The establishment of hospitals and dispensaries;

The great encouragement and facilities afforded to traffic by the freedom from all internal transit duties, and the general security of the high roads, and suppression of heinous crime of a predatory character, which latter still flourishes in many Native States.

11. Much more might be added on this subject; but what has been already stated may, it seems to me, be fairly deemed sufficient to show that the superiority of the British system is so vast in all essentials as to leave ground for no just comparison whatever between it and the Native system, and that, on this score, there ought to be no question that the *masses* of the people, which include the vast numbers composing the trading, the agricultural, and the labouring classes are in every respect far better off, more prosperous, and more happy in British territory than they could possibly be under any Native ruler.

12. With respect to the views and feelings of the Natives generally on this question, it is not to be supposed that the supersession of Native by British rule could be acceptable to those classes which have been reduced by it from a position of dominance and privilege, and placed on a par with those they had previously been accustomed to regard as inferiors, and over whom they had exercised an oppressive and unquestioned authority.

13. Such are the relatives and connexions, or their descendants, of the feudal and minor Chiefs, and their personal and family retainers; the State nobles and officials, the military and religious classes, and, lastly, the large number of followers of all descriptions who are attached to persons of these various classes in all Native States, and obtain a subsistence from them without the necessity for exertion on their own part.

14. There can be no question that most of these classes regard the British rule with more or less disfavour, whether they belong to territories which have been absorbed and brought under its operations, or to those still subject to Native government; the feeling in the former case continuing, not unnaturally, to be, to some extent, entertained by the descendants of those who were originally more directly affected by the change; while, in the latter, it is rather dormant than active, unless excited by some special cause.

15. In addition to the above, there must be a large class of persons in British and Native territory possessed of more than ordinary ability or ambition, who are not disposed to turn their attention to the ordinary business of their fellows, but court a life of political or other adventure, which may afford them the means of the advancement to which they aspire.

To this class the British rule not merely affords no field for the attainment of their desires in the territories subject to it, but even, so far as its influence extends thereto, bars, or at least greatly limits, their chances of success in the Native States, as it will not permit the disorders in them amidst which such chances flourish, and which are indeed essential to the projects and hopes of such aspirants.

16. Again, the inflexible nature of the British system, in all its branches, departments, and institutions, the unvarying manner in which its tremendous and resistless power is exercised under our law with one object, and as if by one man, and its inability to accommodate itself in any way to the individual tastes or interests of the persons or classes over whom it rules, as well as its non-liability to be affected by the influences so universally prevalent and recognised, and so patent, in all Native communities, and so generally acceptable to the Native mind; these features of the system, beyond all doubt, are more or less distasteful and repellent to many of those subject to its operation, especially in the upper classes.

17. Lastly, there is an undoubted tendency on the part of Natives generally, whether in British or Native territory, to magnify and exaggerate the existing inconveniences or causes for dissatisfaction under British rule, which have been already glanced at, and to forget the terrible miseries their forefathers had to endure in the days of Native Government, when the country was a prey to universal disorder, brought about by the excesses and gross mismanagement of its rulers, and the people had neither protection nor security for their persons or property, and in many parts led a life little better than that of wild beasts.

18. A really good Native ruler, swayed by principles of justice, and moderation, and qualified, in all essential respects, for the duties and responsibilities of his position, would no doubt, if he could establish *and work* an administration framed accordingly, enjoy some important advantages which no foreign government could possess or command; and his rule under such circumstances would naturally be in many respects more popular than the British; but experience shows that the chances are so greatly against the possibility of the establishment of such a Native administration in any of the independent Chiefships, that it would, in my opinion, be quite bootless taking it into account in considering this question.

19. There have been various occasions, dating from Sir J. Malcolm's settlement of Malwa, on which this Office has had opportunities of obtaining an insight into the superior advantages of the British over the Native system of government, and of the estimation on that head of the people generally concerned, in the case of Native Districts and States ceded either temporarily or permanently to the British Government, or taken for a time under British management, and also of British lands transferred in exchange to Native governments.

20. I will allude cursorily to some of them here—

1st. The case of the District of Nimar, which was literally a desert when taken over by the British Government in 1818; its lands being depopulated and waste, and the condition of its people most miserable and hopeless.

Under British rule it had, in 1864, when it passed from the control of this Office to that of the administration of the Central Provinces, become a

thriving and most interesting district; its people being as well off as probably those of any of our older Provinces, and thoroughly contented with, and grateful for, the security and blessing they had enjoyed since coming under the British Government.

The proposed transfer of a portion of this district to Holkar has caused a very painful feeling amongst the people who regard the measure with the most intense dissatisfaction.

It is to be observed that these people have had the fullest opportunities of judging of the respective advantages and disadvantages of the British and Native systems, being, it may be said, under both, as their lands are surrounded by Native territory, and there can be no doubt of their views on the question.

2nd. The case of the Pergunnah of Shoojawulpore, which came under British rule about the same time as Nimar, and was transferred to Gwalior in exchange in 1832, against the wishes of the people, who petitioned and protested against the measure, and almost went into rebellion on its being carried out.

3rd. The case of the districts assigned by the Gwalior State, for the maintenance of the Gwalior Contingent, in 1844, and previously.

The introduction of British rule into these districts, some of which were notoriously unsettled and unmanageable by the Durbar, quite altered the character and condition of their people; and when, in 1861, arrangements were ordered for the restoration of some of them to Maharajah Scindia, under the operation of the Treaty of 12th December 1860, the objections and remonstrances to the measure of those concerned were most vehement, and their feeling at its being carried out is still one of extreme regret and dissatisfaction.

4th. The case of the Dhar Pergunnah of Bairseeah, which was made over to the Bhopal State in 1860, after having for many years been under British management. The measure was distasteful to all classes of the people, and caused much dissatisfaction amongst them, which, in the case of some of the Hukdars, has led them to oppose the wishes, and to resist the authority, of the Bhopal government in a way that has given rise to a great deal of trouble.

21. In the numerous instances of the temporary management of Native States by British Officers, and the introduction into some of these States of the British system in a modified form, the result has been most satisfactory both as regarded the advantage to the States, and the light in which the measures adopted were viewed by the people generally.

The improvements, in every respect, introduced under British supervision, have been most striking; but unhappily few of them have been allowed to survive for any length of time after the restoration of the charge to the Native ruler; and though the people generally thoroughly appreciate them and desire their maintenance, there is no confidence, and but little expectation amongst them, in any case, of such a result.

My experience of the estimation in which the temporary British management of Native States, as contrasted with the rule of the Native Chiefs, is held by the people generally, is wholly in favor of the former. Years after such management has been withdrawn, it is spoken of, and alluded to, with expressions of satisfaction, and of sorrow at its having been replaced by the Native system.

22. I will only add that it is impossible to pass from Native to British territory, and *vice versa*, without being struck by the vast difference, in every essential respect, between them and the people inhabiting them; and no British Officer, or servant of the Crown, can, I should think, note this difference without a feeling of pride and satisfaction.

Major Osborne, C. B., Political Agent, Bhopal.
Captain Bannerman, Bheel Agent.
Captain Cadell, V. C., Deputy Bheel Agent.

23. I will append to this Note reports from the Officers named in the margin on this question, which will be found corroborative of what is stated therein.

I hoped to have been able to furnish one also from the Political Agent of Gwalior, the circumstances of that State affording a better field for remarks on the subject than those of any of the other Chiefships of Central India, but it has not yet come to hand.

I trust it may follow shortly.

From MAJOR WILLOUGHBY OSBORNE, C.B., Political Agent in Bhopal, to GOVERNOR-GENERAL'S Agent, for Central India—(No. 138, dated Bhopal Agency, Sehore, July 29, 1867.)

I HAVE the honour to acknowledge the receipt of your confidential circular calling for opinion regarding the popularity of our rule, as compared with that of the Native Chiefs.

2. There is no doubt that our Courts are not so popular as they might be, chiefly on account of the numerous Courts of Appeal, and the technicalities of our law. Our under-paid Native officials too often take advantage of the ignorance of the people to make money, but the intelligence and zeal of our officials to a great extent keep these evils in check.

3. In Native States, not only are all the Omlahs corrupt, but the presiding officer too; and though the farce of a trial is gone through, the decision is generally in favour of the person who has paid most. In these Courts the poor have no chance of justice.

4. In our districts the farmer knows how much he will have to pay to the Government. In Native States, though the assessment is not lower than ours, the farmer is liable to all kinds of exactions. The Chief, should he make a tour, has to be presented with a large nuzzuranah. The Sir Soobah, Amil, or Soobah has to be treated in the same way. A birth, marriage, or death in the family of the Chief leads to another exaction. The death of a Chief's elephant leads to another tax called Hateewan, &c.

5. These taxes in themselves are heavy enough; but when it is considered that, in a Native State, every official through whose hands the tax has to pass expects to reap some benefit from it, the amount realized from the unfortunate farmer becomes nearly doubled, and he never knows how much revenue he may be called on to pay.

6. That our jails are far from being perfect there is no doubt, but no one, who has any knowledge of Native States, can help denouncing the dens of filth and injustice known as jails in Native States, in which prisoners are too frequently tortured, and, unless they can afford to pay the officials, always badly fed, barely clothed, closely packed, and kept filthily dirty. Two instances have come to my notice in Bhopal, which is ruled as well as any Native State in India,—one in which a man, by name Rambuccus, the son of a Talookdar of Bairseesah, was seized when *en route* to petition the Viceroy and sent to Bhopal under a guard: the treatment he received was such that he has entirely lost the use of one leg. The other was one in which a person called Kuramut Khan was seized on suspicion of quarrelling in the street: he was acquitted, but he left the lock-up deprived of the use of one hand.

7. During the 15 years I have been employed in Native States, I have never met an instance of a respectable farmer leaving our territory to settle in a Native State. Occasionally revenue-defaulters escape from our territory into Native States and settle down; on the other hand, I know of many cases of the reverse having occurred. From the Bairseesah Pergunnah, made over to the Begum of Bhopal, many farmers have left and gone into the Hoshungabad and other neighbouring British territory.

8. If the Natives generally preferred the rule of their own Chiefs to that of our own Government, the Native States ought to be densely populated, and land valuable; but experience shows us, not only that the Native States are not densely populated, but that thousands of acres of valuable land are being uncultivated merely for want of labour.

9. In 1857–58 rebellion raged in our lastly-acquired province, whilst our oldest possessions remained in perfect peace. In 1832 the Pergunnah of Shoojawulpore was made over to the Gwalior Durbar, in exchange for land adjoining the Saugor and Nerbudda territories. The people petitioned against the transfer individually and collectively, describing it in their petition as a grievous calamity. Though Major Henley's assessment of the pergunnah was very heavy, the potails, on learning that an official was being sent by the Durbar to receive charge of the pergunnah, came forward and stated that, if the object of the British Government in making over the pergunnah was a pecuniary one, they would guarantee an increase of Rs. 35,000 per annum (*i.e.*, 35 per cent.) provided they were allowed to remain under British rule.

10. Their petition not meeting with any success, a large number of them left the pergunnah and collected in a neighbouring village belonging to Indore; an outbreak was imminent, and was only prevented by the interference of the Resident at Indore. Mr. Wilkinson in reporting the matter, wrote—"if the ryots who were hitherto remarkable for their quiet submission are not protected from the rapacity and exactions of the local authorities, they will be driven into rebellion and other lawless acts."

11. For many years after the transfer, the ryots and others constantly petitioned the Political Agent against the oppressive acts of Scindia's officials, and the complaints even now are frequent.

12. The pergunnah of Baireesah was given to her Highness the Begum of Bhopal in 1861: the people have ever since overwhelmed the political agent with complaints. The assessment of the pergunnah has been more than doubled. Those holding hereditary rights which had been never disputed by our Government during the 40 odd years it was under our administration, are now called on to produce their original grants, though their rights were guaranteed to them by the late agent, Governor-General, for Central India. During my march through the pergunnah, I am always beset with petitions, and go where I may in the district, I find the population much decreased by emigration.

13. The numerous guaranteed Thakoors in these parts are most tenacious of their rights to be under the order of our Government, and not answerable to the more powerful Chiefs.

From CAPTAIN P. W. BANNERMAN, Bheel Agent, to the GOVERNOR-GENERAL'S Agent for Central India — (Dated Bhopawur Agency, August 1, 1867).

IN reply to your confidential circular dated 8th July, transmitting a communication from the Foreign Office in Calcutta, I have the honour to state that there can be no question, in my humble opinion, that the general masses of the population are undoubtedly more prosperous in British territory than in States under Native rule. They enjoy a settled government, are moderately taxed, and possess far greater security of life and property than in any Native State whatever.

2. There are two points in which the system of British administration differs most essentially from the method pursued in Independent States, *viz.*, the revenue and judicial branches.

3. As regards the first of these, there is no doubt whatever that, under the British Government, the landholder and the agricultural class generally have been treated by the Government with every consideration and kindness, the assessment is light, and individuals holding land have the satisfaction of knowing that they are liable only for the fixed assessment which will not be altered capriciously or hastily, and that they will be entitled to some compensation for any improvements they may have made.

4. On the other hand, under a Native Government the assessment generally is very heavy; for although the actual sum demanded as the Government due may not be excessive, the contributions which, under a variety of heads, the cultivator has to pay make up a large amount; the holders of land also have no guarantee that the assessment will remain unaltered even for the time originally fixed.

5. The system of short leases (very frequently, if not generally, only for a year), which is so much in favour with Native Chiefs, is in every way objectionable; the renter has but little interest in the improvement of the country, and looks only to his own profit.

6. The pecuniary interest also which the governing class have in the country is most prejudicial to a good system of government. Self-interest and self-enjoyment are always preferred to the prosperity of either the present or future generations.

7. There may have been a few instances in which ryots under the British Government have migrated to a Native State; but these are quite the exception, whilst instances of the reverse are far more general.

8. With regard to the judicial branch; as I have been nearly all my service (13 years out of 15) in the Native States of Rajpootana and Central India, I am not in a position to offer an opinion as to the light in which the working of our Courts is generally viewed by our own subjects. When, however, I have discussed the question with Natives of both the higher and lower classes, the defects they have

complained of are the vexatious delays of our Courts, and the manner in which they assert the law can be strained.

9. In the purely governed Native States, with which I have any intimate acquaintance, there is but a very feeble attempt to administer justice in the strict sense of the word.

10. The principle with us, that in the eye of the law all are equal, is not only practically ignored in a Native State, but is positively distasteful to all who exercise any authority therein. They cannot understand, even in theory, far less attempt to carry into practice, the idea, that justice ought to be meted out equally to the noble and the ryot.

11. I can, in two instances, speak with personal knowledge of the views with which the general mass of the population regards a transfer from British to Native rule.

12. I was Assistant-Superintendent at Neemuch when the exchange question with the Maharajah Scindia first came under discussion, and the almost unanimous wish of the people was to remain as they were, and many were the verbal appeals made to me to this effect by men of all classes. They all viewed with dread the uncertain demands which would in all probability be made on them in the shape of nuzzuranah, extra cesses for one thing or another, and were most averse to the transfer. I have never been near Neemuch since that time, but I have constantly met or heard from old Native acquaintances, and they all agree in regretting the removal of the British superintendency. They assert that neither life nor property is so safe as it was, that nothing is being done in the way of roads, and that the administration of the Courts is dilatory and uncertain to a degree.

13. In Dhar again, which is under my immediate supervision, the mass of the people have little faith in the administration of justice, and from the complaints I have received, I fear they have little reason to have any, and they are, I believe, sincere in their expressions of regret that the system observed during the British management of the State is no longer in force.

14. The clever and ambitious men—the military and the religious class—have undoubtedly a larger and more congenial sphere for their abilities in a Native State than under the British Government, whilst, as regards the trading and agricultural class, I believe them to be much better off in every way under our administration than under Native rule.

From CAPTAIN T. CADELL, V.C., Deputy Bheel Agent and Political Assistant, to the AGENT TO THE GOVERNOR-GENERAL FOR CENTRAL INDIA—(Dated Camp, Indore, July 31, 1867.)

In reply to your confidential communication on the question of the method of government in Native States possessing, in the estimation of the Natives, any superiority over the system of British administration in India, I beg to state that I have had an excellent opportunity of forming a judgment on this question.

When I assumed the appointment of Assistant Political Agent in Nimar in 1861, the subject of giving a portion of that province to Holkar was mooted, and I cannot describe the alarm and the detestation of the measure evinced by the inhabitants of the pergunnahs which it was supposed would be made over. The great majority of the inhabitants were cultivators; and as they had been under British Government for forty years, their aversion to the measure might have been ascribed to the dislike to change of any kind generally evinced by that class, but that this was not the reason was clearly proved to me afterwards.

On the transfer of Nimar to the Central Provinces in 1864, my connection with the district ceased; but I had occasion to march through a large portion of it in the following year. By that time the new system of administration had been introduced, and they naturally did not at once appreciate its advantages, as they had been most happy and contented under the old system. They were apprehensive of further changes, and did not fully comprehend those that had already taken place. Notwithstanding all this, their aversion to being made over to Holkar was evidently as great as ever.

I had numerous conversations on the subject with all classes of the community; indeed, it was almost the only subject of conversation at the time, and all were of one mind in the matter. As I had ceased to be connected with Nimar, and had

never been connected with the Central Provinces, the opinions they expressed could not have been with any view of pleasing me.

In taking the above statement into consideration, it ought to be borne in mind that the inhabitants of British Nimar are well acquainted with the manner in which administration is carried in the Holkar State, as Nimar is conterminous with that State on three sides, and British and Holkar villages are in some parts much intermixed. Moreover, the inhabitants of both districts are composed of exactly the same classes, and are on most intimate terms with each other.

The Native State of Burwanee has been under British management since 1861; but it would hardly be worth while to compare its previous with its present condition, as it has been even worse managed under its Native ruler than Native States usually are.

It will be sufficient to say that all its peaceable and respectable inhabitants are as averse to being surrendered to the rule of their Rana as those of Nimar are to being made over to Holkar.

MEMORANDUM by W. C. ANDERSON, Esq., Survey and Settlement Commissioner, Southern Mahratta Country—(Dated August 24, 1867.)

I ENCLOSE the memorandum called for by your letter of the 1st July last. I regret that a very severe illness should have made me so late in sending it in.

Though undoubtedly people do occasionally grumble and contrast unfavourably British rule with that which formerly prevailed, I exceedingly doubt if the grumblers themselves really mean what they say, or would, for one moment, even when smarting under some special annoyance, set British rule, as a whole, below that formerly or at present existing under Native administration.

2. In the southern half of the Bombay Presidency, with which alone I have an intimate knowledge, the Nizam is the only great and purely Native State, with the administration of which the people are cognizant; and most certainly the lot of the people there is not envied by the inhabitants of our territories. A petitioner in which desiring to paint his grievances in the strongest terms, winds up with the assertion that his wrong is "such as could only be paralleled in the Mogalee," or "worse than this is not done in the Mogalee." The "Mogalee," or Nizam's government, though it has greatly improved in character of late years, being, from old tradition, considered to express the acme of misrule.

3. It may be asked why the inhabitants did not emigrate into adjacent British territory at the time such misrule prevailed in the Nizam's provinces. First, a Native is a very long-suffering animal, and his local affections are very strong; he will endure much before he makes up his mind to permanently leave the spot where he and his forefathers have lived and died from time immemorial. Next, in the worst managed Native State there was always a certain admixture of good and bad treatment of the ruled, what the people call *nurm gurm*; gross oppression did not come home to every one, and he who escaped for the time had a certain satisfaction in seeing suffering touch his neighbours without reaching himself. There was too always the chance of a stroke of luck from the caprice of some great man. Stories of poor men suddenly made rich exercised a powerful influence over the minds of a very ignorant people with habits unsettled by centuries of doubt as to who would reap where one sowed, and a consequent marked aversion to steady labor. Consequently, the imaginary "chances for a poor man" appeared much greater under the fast and loose Native, than under the steady equality of British administration, which holds out no hopes, except as the reward of steady persistent labour.

4. Again, it was no easy matter for a person, desirous of emigrating from Native into British territory, to carry out his intention. The ryot is the milch cow of the State; the object is to get all that can be got out of him, but not to drive him away. It was easy to set up a plausible claim against any intending emigrant, the enforcement of which would strip him of all his property. The Plan of Native administration, wherever I have come in contact with it, always provides the materials for the setting up such a claim, in the system of accumulating outstanding balances against individuals resulting from a certain portion of an unrealizable land assessment being foregone every year, but still remaining as an available claim against the ryot. Even where this device did not systematically exist, from the days of Naboth's vineyard downward, in Eastern countries, the powers that be would never find any difficulty in establishing some claim against a poor man.

5. Still it must not be supposed that, in spite of all obstacles, emigration from Native States into British territory does not occur on this side of India; the contrary is a fact notorious to every one whose duties have led him to spend much time among frontier villages. Statistics of emigrants into British territory are not available, as no more account is kept of incomers than of outgoers: to obtain returns of any value for a series of years past from the frontier villages would be almost an impossibility. It would be necessary to ascertain the motives inducing each case of emigration both to and from Native territory, before any true conclusion could be drawn.

6. The jagheers and principalities of the Southern Mahratta Country should exhibit model specimens of the advantages of Native administration. They vary in area from 100 to about 800 square miles, and are thus not too extensive to preclude considerable personal control, on the part of the rulers, over every detail of the administration. Their powers are full, and they manage the internal affairs of their States unchecked by British authority, except in cases of gross and notorious misgovernment. These States, which are of more than average fertility of soil, were secured from foreign aggression, consequently their whole surplus revenues, after providing for the legitimate expenses of the State, were available for internal improvements which, however, were entirely neglected. Thirty years ago these Chiefs were, I think, without exception, deeply involved in debt arising from personal extravagance. In some cases economy was enforced by the urgency of the British representative; in other cases the revenues were temporarily sequestered; in two cases long minorities occurred, during which the territory was managed by a Regency supervised by the British representative which resulted in the young Chief attaining his majority and succeeding to the management of his principality, not only free of debt, but with an accumulation in his treasury equal to three or four years' revenue. In one of these cases, Jumkhundee, the young Chief was very carefully educated. He reads, writes, and speaks, English with the greatest facility. In both these cases the whole accumulated revenue was squandered, within 10 years of accession, in personal extravagance by the Chief, and only two months back a large body of the ryots, inhabitants of the territory of the Jumkhundee Chief, put in a formal protest and petition to the Political Agent against the exactions attempted by their Ruler in a recent personal visit of his to the talooka they inhabited. It may easily be understood that no ordinary pressure on the part of the Chief would induce his subjects to resort to such an open act of remonstrance.

7. So far from the people of these Southern Mahratta Country States preferring their own form of administration to ours, in the point most closely touching the bulk of the people—the agricultural population—they have given the Chiefs no rest till they consented to allow a revenue settlement of their territories similar to that introduced in the adjacent British territories. The majority of the Chiefs in independent management of their estates have already agreed to this settlement being made by our Survey Department, and some of the settlements have been carried into effect. The remainder will not be long able to refrain from consenting to a similar measure.

8. I append an extract from correspondence which passed some years back relating to the past revenue management of certain lapsed Jagheer Districts, which, as far as the general system goes, is equally applicable to the ordinary management of such States even now. The ryots have, however, in the last thirty years, increased in intelligence, and would not tamely submit to what in old times would have been borne in silence. So far the reflection of our rule has benefited the people in adjacent foreign territory.

9. When the Raichore Doab, which had been part of the Assigned Districts of Hyderabad and under British administration for some eight years, was about to be restored to the Nizam in 1861, a petition against the measure was, I heard, sent in to the Resident at Hyderabad. It may be most justly urged that it is very easy to get up petitions for or against anything in India; but there could be no doubt whatever about the feeling of the masses of the people there on the subject of their restoration to Native rule.

10. I was myself in the north of Mysore this year at the time of the arrival of the news of the intention to continue the Native dynasty. The intelligence was certainly not received with unmixed pleasure by the masses of the people, or without sinister anticipations for the future. The recollection of what they suffered thirty-five years ago, when the Rajah's administration was unchecked, had not passed away. Of course it may be said that the real sentiments of the people would be concealed from us; but my impression is that, on the whole, the people of this country—the lower and

middle classes—are remarkably outspoken and unreticent to those who meet them familiarly, and who they do not suspect of asking questions for some special purpose.

11. Lastly, I think I may adduce the general tenor of the Native Press on this side of India as to the feeling of the more educated classes regarding the comparative advantages of our rule over its predecessors. The independence of this Native Press verges on license; there is not the slightest hesitation in freely discussing and pointing out any defect in our administration; and it must be remembered that the educated classes of Natives are not, in one respect, those from whom the most impartial judgment might be expected, as they must look on us as filling the places which they might, under Native rule, look to occupy themselves.

12. In the British dominions the people see education fostered; useful internal improvements in full progress everywhere; general security for life and property; a wide-spread diffusion of material prosperity; and, on the whole, every man uninterfered with and left free to follow his own pleasure. These advantages, which may be said to exclusively attach to the British territories, are perhaps tempered with some occasional inconveniences and annoyances, especially in the procedure of our Courts of law; but taking the balance of the whole, no Native of reasonable intelligence will, I believe, hesitate for one moment as to which form of administration, the past or present, Native or British, he gives the preference.

EXTRACT of LETTER from CAPTAIN W. C. ANDERSON, Superintendent, Revenue Survey, Southern Mahratta Country, to REVENUE SURVEY COMMISSIONER—(No. 267, dated July 26, 1853.)

48. UNDER our Government the land measures and rates obtaining under the

In relation to Uthnee Talooka Settlement, Belgaum Collectorate.

Nepaneeekur were for want of others continued in use. The assessment on the superior description of land was in general very high. Under the Native system, though the assessment is nominally fixed, it is in practice anything but so. A bargain is made with the ryot from year to year, and he either gets his land at a rate lower than the standard rate, which reduction is known under the name of "Khund Tola," or, if possible, he is induced to engage at the standard, receiving as a make-weight a tract of poor land rent-free, or at a nominal assessment. A large uncollectable balance is also allowed to remain outstanding from year to year, advantage being taken of any very favorable season to collect as much as possible. The threat of enforcing his claim on this outstanding balance is used by the jagheerदार to compel the ryot to continue to cultivate. The jagheerदार always having a large margin on his side, limits his demands alone by the capacity of the ryot to meet them, and the ryot's capacity is measured alone by the conscience of the jagheerदार. In some jagheers they are ground down to their last rupee, and in others, where a more liberal policy prevails, enjoy considerable ease. A minute knowledge of the means of every cultivator is the basis of the Native system, under which the revenue of a district may be raised to an amount otherwise unattainable, and yet without actually ruining a single ryot. The acquisition of capital is, however, impossible: there is no incentive to exertion, and progress of any kind is not to be looked for.

71. As before mentioned, this mehal composed part of the estate of Purushram

In relation to Yadwar Mehal Settlement, Collectorate Belgaum.

Bhow Sahib, of Tasgaum, and lapsed to Government on his death in 1849. He was very deeply involved in debt, and his whole estates were mortgaged. This mehal had been for 14 years, previous to the Tasgaum Chief's death, mortgaged nominally to a wealthy sowcar, named Narayen Rao Anunt Walunbeh, but in reality to two karkoons of the sowcar who were designated Kumavisdars, and on whom civil and criminal jurisdiction over this district was conferred. It is not very probable that people of this kind would consider the welfare of the ryots; their sole object would be to get as much as possible out of them, and to this end in fact their whole energies were exerted. The supreme authority still remained with the Chief, and to him accounts were yearly preferred by these two karkoons, and remissions sent up to him for sanction. When sanctioned, and a corresponding deduction made from the net revenue in his accounts with them, a similar amount of remission was by no means extended to the ryots; little or nothing was actually remitted, though payment of what could not be realised at the time might be postponed, and the sum remain as an outstanding balance, the threat of exacting which would be used to deter the ryots from throwing up their land. The extent to which this system was carried may be understood from the fact that, when this district lapsed to Govern-

ment, the outstanding balances in the ten Government villages amounted to no less than Rs. 78,026: the average gross revenue during the first three years of our rule being Rs. 8,414, of which about one-tenth was remitted. And it did not always occur that the demands of the mortgagees alone were to be dealt with by the ryots, as the Chief, when hard pushed, is said to have secretly collected what he could on his own account. At last, in consequence of the repeated complaints against the two mortgagees, a karkoon was appointed on the part of Government, with the consent of the Chief, to overlook the revenue affairs of the mehal, which induced some amelioration in the state of the people. This system lasted for three years, and ceased very shortly before the death of the Chief.

EXTRACT of LETTER from CAPTAIN G. WINGATE, Revenue Survey Commissioner, to COLLECTOR OF BELGAUM—(No. 577, dated August 24, 1853.)

5. CAPTAIN ANDERSON gives a very clear account of the past revenue management of the three districts. The Hoongoond Talooka has been under Government management since 1818; but the Uthnee Talooka and also the Yadwar division are formed of lapsed jagheers and have only fallen in of late years. Captain Anderson's description of the revenue management of Uthnee and Yadwar under the jagheerdars may, I think, be relied on as correct in its general features, and the wretched picture of misrule which he places before us is, I think, particularly worthy of consideration at the present time, when the ryotwar system and revenue management of this Presidency have been brought into most unmerited disrepute by the evidence of late witnesses in Parliament, and by writers on the India question who have had little or no practical acquaintance with the system, and no opportunities of forming a correct judgment as to its merits or defects.

6. I have had unusually favourable opportunities, during the last few years especially, of observing the much lauded results of settling with zemindars or middlemen for villages or talookas in the gross, instead of with the actual proprietors and cultivators; and what I have learned of the working of the revenue management of the great jagheerdars of the Southern Mahratta Country, of the Khotes of Rutnagherry, and of the Talookdars of Guzerat, has greatly strengthened my previous convictions as to the immeasurable superiority of the system of management for the field assessments of our Presidency, which has gradually been raised on the foundations laid broad and deep by the wisdom of a Munro and an Elphinstone.

7. I have everywhere found that the actual proprietors and cultivators of the soil, with the aid of the village money-lenders, are the real creators of all the wealth to be found in the country, and that it is a grievous delusion to imagine that their efforts are at all assisted by the intervention of middlemen. These, whether Jagheerdars, Khotes, or Talookdars, I have found to be too generally quite indifferent to the welfare of the inferior landlords, and either sunk in sloth and sensual indulgence, or greedy of money for purely selfish objects. The fostering care which they are so generally said to take care of their ryots may exist, and does, I do not doubt, in rare instances; but a selfish rapacity, aggravated by the overwhelming debt in which they are almost everywhere plunged, and by the clamorous crowd of greedy relatives and sycophants by whom they are surrounded, is, I should say, the distinguishing characteristic of the middlemen or great landlords of our Presidency.

EXTRACT of LETTER from H. W. REEVES, Esq., Acting Revenue Commissioner, Southern Division,* to SECRETARY TO GOVERNMENT OF BOMBAY—(No. 277, dated January 23, 1854.)

9. WITH regard to the observations* of Captain Wingate on the past management of Uthnee and Yadwar, I venture to state, after several years' acquaintance with the management of landholders of the Southern Mahratta country, that there is no greater mistake than that into which many persons have fallen of contrasting Government villages unfavourably with those of landholders. I have had several years of personal acquaintance with the revenue management of the Jagheerdars and Enamdars of the Southern Mahratta country, and I very confidently assert that the alienated villages will bear no comparison with those belonging to Government in any single particular. The ryots of

* Paragraphs 5 to 7.

* And previously Collector of Belgaum and Political Agent, Southern Mahratta Country.

the latter are in much better circumstances, and considerably happier than those of the former. The depressed condition of the jagheer villages of the Southern Mahratta country is become proverbial, and this, when the embarrassed condition of the Chiefs is considered, together with the reckless means adopted by them to raise money under the farming system, cannot be a matter of surprise. The political records abound with remarks on the mismanagement of these estates, and it is in consequence of this misrule that Government have received Gokak, in a state of extreme poverty, from the Chinchnee Putwurdhun; Yadwar, in a still worse condition, from the Tasgaum Putwurdhun; and Uthnee, half depopulated, from Appa Dessae Nepaneeekur. The system of farming out mehals and villages to their creditors is that to which I allude as pursued by most landholders. This having been put an end to, and the assessment having been fixed for a period of thirty years at a rate calculated to enable the ryot to realize a fair profit on his holding, all cesses having also been abolished, a solid basis has been laid for improvement, and we may now look forward with confidence to witnessing, in the course of a few years, a considerable change for the better in the condition of the districts to which these remarks refer.

From C. A. ELLIOTT, Esq., Futtchgurh, to the UNDER SECRETARY
TO THE GOVERNMENT OF INDIA, Foreign Department—(Dated
August 26, 1867.)

I AM afraid I have no information to contribute which will be of any assistance towards the object with which your Circular of July 1st was issued. That the British Administration has secured to its subjects a vast increase in security, prosperity and material comfort, compared with those it succeeded to, is gross, open, and palpable. The question admits of no discussion. But the comparison Sir John Lawrence wishes to make is not with the Native States which preceded us, but with those which are our contemporaries, and which exist in districts alongside of our districts. Can we prove that our people are more prosperous and happier than those who live in the neighbouring Native States?

On this point I am sorry to say I know nothing which can be put in evidence, nor do I see how it would be possible to prove it. We have statistics of our territories. I know of no statistics of Native States. I can tell you the taxation per head in the Hoshungabad district; the area occupied by each cultivator; the average profits of agriculture to him; the quantity he spends in cloth, in salt, in sugar. I can give the actual export and the estimated profit of the wheat trade or the cotton trade. I can form a good guess at the number of educated people, or at the severity of the competition for land. But though Bhopal adjoins Hoshungabad, and though I have travelled in Bhopal, and talked to the cultivators, and know several of the local Governors, I cannot ascertain any of these facts, nor can any one in Bhopal tell me respecting Bhopal the things that I can tell them respecting Hoshungabad. One element of the statistical comparison appears to me to be entirely wanting.

If a comparison is based on the impressions derived from personal observation, it seems to me that nothing can be more delusive. We are, most of us, singularly incapable of finding out by observation facts regarding the circumstances of people which ought to be especially observable. Two instances brought this home to me in a very striking way. When the discussion as to tenant right in Oudh was arising, a writer in the *Calcutta Review* said:—"What good have Mauroosie rights done to the cultivators in the North-west? They have existed for 30 years, but I defy any one to show me that the Mauroosie tenants are better fed, better clad, better housed, free from debt, have better bullocks, or are in any way better off than the tenants-at-will." I put this question to many experienced and sagacious persons, and they all replied that their observation was not acute enough to distinguish the one class of tenants from the other; yet common sense tells us that there must be a distinction, and that it is our powers of observation that are in fault. The second instance that I will mention occurred during the cotton famine, when it was at its height in 1864. Both the most accurate statistics and the universal consensus of the people combined to assure us that the Native looms were almost entirely thrown out of work, and yet that the sales of English piece goods had greatly fallen off. If anything can be called certain, it was certain then, in the face of the great rise in prices, that all men were stinting themselves of clothes, and that the poorer cultivators who used to wear three *dhotees* a year were wearing only two; yet, though I repeatedly put the question, I could find no one who assured me that of his own

observation he had noticed that the people generally were going worse clad than usual.

I think, then, in the face of this deficiency both of statistics and of acute perceptions, we must fall back on general arguments and on common sense. If any one asserted to me that Native States were superior to us in their method or government, I should reply that the onus lay on him to prove it, and that the first thing to prove was the existence of any essential difference in the *method* of government. My impression is, that the better a Native State is, the more it approaches our system. In Bhopal, which is probably the best Native government in India, I really know of no difference that exists in theory; practically the government is laxer, less rigid, and more in sympathy with the governed. We can show that our administration is based on sound principles; that it is a government of great ideas; that it is carried on with scrupulous honesty and a constant desire after justice and right; and therefore the presumption that it secures material prosperity is so violent that it would need an extraordinary amount of evidence on the other side to rebut that presumption in the mind of any unprejudiced man.

But I would not go beyond this. I do not think the people are happier under us than under Native government; and if they were, I do not see how it could be proved; nor does it seem to me likely that they should be happier. Our Government, from the mere fact of its being a government of great ideas, has in it something of strain and tension, and, so far as it comes into contact with the people, must communicate that tension to them. With the higher minds, perhaps, it should be popular, but to the people at large it assumes almost a pedagogic attitude; they are as it were a school to us. Now, though popularity is a good thing in a schoolmaster, we do not consider that the most popular teacher is necessarily the best.

We assume, and history and the consent of the civilized world justify us in assuming, that we are placed by Providence in India for the good and the improvement of the people, to educate and stimulate them up to such a point that they may at last be able to govern themselves. As long as this work remains for us to do, we cannot be really popular. If we were popular, it would show that the people understood and appreciated our aims, that our thoughts awakened an answering chord in their minds; in other words, that we had done our work and brought the people up to a moral and intellectual level with ourselves, and that it was time for us to retire from the scene. It seems to me obvious that no government can be really popular with a people which is not the natural outcome of the minds and habits of the people, or at least of a large number of them. A government, therefore, confessedly ahead of the people, which deliberately sets itself to raise and improve them, cannot, especially if it is a government *ab extero* by a foreign race, hope to be popular.

Is the half-tamed tiger in its cage happier than the wild beast in the jungle? Is the half-tamed savage in an Arkansas farm happier than the free Indian on the Red River? Better off in material prosperity no doubt; happier *sua si bona norint*, as the Viceroy says, but not absolutely happier, or rather not always happier. And the moments when his brutish nature re-asserts itself in wild rage against civilization are the moments which bring him most before the notice of the world, and which seem to give the key-notes to his character and feelings. It is the same with the Hindoostanee. Though I would not, of course, place him so low in the scale as the Red Indian, still there is something wild and untamed in him which breaks out at times, and which disquiets him in his sleekest moments. I believe the point in which our Government chiefly fails to meet his views is not so much its want of a career as its want of chances. The distinction I draw is that a Native is indignant, not that he cannot rise by merit, but that he cannot rise by luck. The gambling spirit is ingrained into them by centuries of sudden rises and falls, and for this spirit our administration affords no opening. To their minds, at least in their unquiet moments, it seems better that one Azingurh Koormie should become Dewan at Lucknow, and 20,000 Koormies be tortured to death by Rughbeer Dyal in Baraitch, than that all the Koormies in India should live in peace and prosperity, and none should ever become a Rajah. This is only one of several instances that might be given in which their instincts are opposed to ours, and clearly it is not we who should yield. All nations in turn have gone through this process of taming and settling down. Unless we fail utterly as a government, we shall succeed in eradicating these turbulent instincts; but till we do that, we cannot hope to be as popular as the Native governments which gratify and pamper those instincts.

From COLONEL G. RAMSAY, Nepal Residency, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department—(Dated August 26, 1867.)

IN reply to your letter, "Confidential," of the 1st ultimo, I regret that I am unable to refer you to any records bearing upon the subject of your inquiry, viz., whether, in the estimation of the Natives of India, the system of the British Administration possesses any superiority over the method of government pursued in the Independent States. I can merely give you my individual opinion, based upon a service of five and twenty years at the Courts of Lucknow, Nagpore, and Nepal, not only that the British system is really far superior to that of the Native governments, but that it is universally recognised as such by those of the Natives who have been able to compare the two.

The relative merit of the two systems has repeatedly been discussed in general terms, in my presence, by Natives of rank and intelligence, and always to the advantage of our own rule. Of course, however, those who exercise authority, or hope to attain power, had much rather remain as they are, untrammelled by rules which militate against their own personal interests.

The difference between the two systems may be said to be this: Under the British rule the interests and the happiness of the masses are seriously considered, whereas in a Native Independent State these are the last things thought of.

NOTE by LIEUT.-COLONEL E. THOMSON, 1st Assistant to Governor-General's Agent, for Central India, on the general question of the Opinion entertained by the Natives of India as to the Superiority or otherwise of the System of British Administration in India over that which obtains in the Independent States—(Dated August 26, 1867.)

As far as my experience goes, I have found the system of Native government to be loose, disjointed, and essentially wanting in vitality. Through an ever active, though exquisitely concealed, spirit of mutual suspicion and distrust, running from the Chief to his Minister, and thence downwards to the lowest official, unity of action is practically excluded from any branch of the administration; the distribution of justice and the collection of revenue are left to chance; the consideration of security of life and property degenerates into a question of might against right, and the idea of law and order becomes a dead letter.

2. The official charged with the administration of justice is frequently uneducated and generally corrupt, consequently the baser instincts of his nature prompt him to offer his justice for sale, more particularly because the animosity of some other official may bring on him the displeasure of the Chief, with loss of office, heavy fine, penury, and degradation; for any or all of these calamities may befall him in a day. At times, to conciliate the Chief, he offers him a yearly sum out of the proceeds he realises; and I have known of the Chief officer of the Adalat being selected as the one who made the highest offer for the contract for distributing justice. On one occasion this happened to be a woman who nominated her substitute to sit in Court, on an understanding that he should receive a fixed salary. Once when seated in cutcherry, directing the proceedings of the Durbar—all arrangements of this nature having been, of course, put a stop to—I was surprised to see a petitioner present himself with a suit, and at the same moment draw forth a silver ornament, which he placed on the table, with the intimation that this was what he could afford for an award in his favour.

3. While the poorer classes had thus to pay for justice, there were men of position or of wealth to whom was permitted the privilege of recovering claims due to them in a different manner. Some of these men exercised as complete control over the persons of their debtors as if they were their slaves; imprisoned them in their own dwelling-houses, denying all egress, even for purposes of nature, and reducing them almost to the point of starvation. Indeed, as the actions of such men were unquestioned, there is no reason to doubt that death did result at times from the severity of the treatment they inflicted. Should the unhappy debtor seek safety in flight, his house and property, however valuable, became the perquisite of his creditor; and his family, if remaining behind, was liable to be incarcerated as he would have been. I have myself restored to a man who thus absconded from having been badly treated his house and property, and released his family from restraint, desiring his creditor to adopt the proper method to recover his debt, and considerable irritation among

the wealthy classes was the result of my summarily stopping the barbarous custom that prevailed in this matter.

4. In the same way has criminal justice been dispensed; prisoners are inconvenient in Native States; fines therefore become a source of revenue, and he who commits a heinous offence may secure the opportunity of repeating his crime by paying according to his means. A man may even commit very serious offences and escape altogether unpunished if he be a favourite follower in the Chief's personal retinue. I have adjudicated in a case where a personal attendant on the Chief roamed over the country, seizing and driving away cattle as "lawaris" (without owners), and appropriating property under the same pretence, till he became a perfect scourge, no one daring to complain against him, the owners of the cattle even hesitating to claim their property. It was quite surprising what amount of positive animosity against the Chief was created by the universal feeling of insecurity this man kept alive.

5. It is well known that a great many Native States foster a class of men who make their livelihood by petty thefts. These men are not so much dangerous at home as within our own well governed British districts; they sally forth from their villages at the fixed time of the year, not in bodies, but in twos or threes, or even singly, the veriest children being sent out on these occasions; they go to long distances—north, south, east, and west—throwing a regular network of petty depredation over the whole continent, and returning, after long absence, to their friends; they give a portion of their plunder to the Chief, either in kind or a yearly contribution, and divide the rest. I knew a village which was altogether peopled by this class, and I was gravely informed by the Durbar that a yearly income was drawn from this village after their annual expeditions. It is right to say that my suggestion was at once adopted to introduce a periodical muster of the villagers, to remit their yearly contribution, and to give them land to cultivate.

6. The few prisoners who are unfortunate enough to be incarcerated in Native States lead a life the most deplorable. I have seen such men stowed away in the most obscure part of a fort surrounded by filth, themselves unwashed, unshorn, and almost unclad; really more like men escaped from a herd of savages than human beings, likely at some future period to mix with their fellow men.

7. But sometimes there are men who are treated even worse than these prisoners. I have known of a Thakoor, calling himself a noble, tying up to a tree by his wrists a man obnoxious to him, quite close to a populous city where the Ranees, then the head of the administration, held her Court. The unfortunate victim, after being beaten, has been wounded with a spear, and then cast with his sores open and bleeding into a place of confinement uncared for and unattended; maggots sprung up in his sores, and finally death released him from suffering.

8. The system of revenue collections I have been introduced to in Native government is eminently calculated to cause the finest estate rapidly to deteriorate. If the treasury is drained, a full instalment of land revenue is anticipated. On such occasions I found a demand was made on wealthy bankers, and permission was given them to recover the revenue when due. They advanced the money on account of the zemindars, who had to pay not only exorbitant interest, but other charges of various descriptions. A second instalment would be anticipated in the same manner. Under such a system settlement would be impossible, and the agricultural classes—the real wealth of a State—became ground down to a state of positive slavery, for they never knew what they must pay as revenue or when they must pay it. If their crops were good the demand of the State increased. To realize from the soil the sum oppressively extorted from them was their only object in the present; to die at the plough their only prospect in the future. The banker extorted from the zemindar, the zemindar from the cultivator, and the latter gave his last farthing and prayed to be left alone.

9. The introduction of an altered system amid this misery was the cause of universal joy; and it is well known to the Governor General's Agent, that when this unhappy system of the Native Government was gradually and gently replaced by one founded on the principles that obtained in our own districts, there followed general prosperity and satisfaction, a flourishing treasury, and increase of revenue.

10. But if I were to take up every department of administration I should swell these remarks to a serious length. Suffice it to say that the natural condition of a Native government is one which gives no dignity to its ruler, no respectability to its officials, and no security or happiness to its people.

11. It is not the duty of Political Officers to parade the errors of Native administrations, where they have been placed to smooth what is rough, and to soften what is harsh. But the above observations have been called for by the desire of the Governor General's Agent, that I should submit any remarks bearing on the question in point from the experience I may have acquired during an unbroken residence of upwards of four years in Native States while in charge of three Native administrations.

12. In conclusion I may observe that wherever improvement was effected in the points above noted it was through the introduction of measures found to have been beneficial in British districts; and whenever a Chief or a Durbar desired reform, it was always proposed to introduce such reform by following the principles of government in British territory.

From T. C. HOPE, Esq., Collector and Magistrate, Surat, to the UNDER SECRETARY TO THE GOVERNMENT of INDIA, Foreign Department—(Dated Surat, August 28, 1867.)

IN reply to your letter of July 1st, I am glad to state that I do not feel the slightest doubt that the conclusion of His Excellency the Viceroy, that the masses of the people are incontestably more prosperous and happy in British territory than they are under Native rulers, is a sound one. I hope you will excuse my adding that my opinion has been formed after having enjoyed, as you are aware, somewhat exceptional opportunities for contrasting the two in almost all parts of our Presidency.

The question must of course always remain to a certain extent a matter of opinion, owing to the great difficulty of obtaining reliable statistics; but I will mention a few instances within my own knowledge,—(1), of the relative condition of the people in British and Native territories contiguous to each other; and (2), of the preference for our rule shown by the people of the latter.

A glance at the map will show that the Surat district is to a considerable extent intermixed with certain territory belonging to His Highness the Gaekwar, a fact chiefly owing to the 28 pergunnahs, called the Attaveesee, having been divided between the Peshwa and the Gaekwar, and to our having by various Treaties succeeded to the rights of the former. As the pergunnahs held by the two Powers respectively lie in close juxtaposition and partake of the same characteristics, they are peculiarly adapted for a comparison of the nature required.

The accompanying statement shows the present condition of ten of the Gaekwar's pergunnahs compared with seven talookas of our own. The figures for the latter are of course absolutely correct; those for the former are, I believe, very reliable, having been obtained from highly respectable private sources. The first point observable is

	BRITISH.		GAEKWAR.	
	Maximum per Beegah.	Average Maximum per Beegah.	Maximum per Beegah.	Average Maximum per Beegah.
Dry crop - -	Rs. 8	Rs. 5	Rs. 20	Rs. 14
Garden Land -	16	8½	45	26
Rice - - -	17	10½	30	23

the extreme oppressiveness of the Gaekwar's revenue collections. His maximum rates, compared with ours, are summarised in the margin, and the extent to which they are imposed is evidenced by the fact that his cultivated area, though less than ours in the proportion of 22 to 100, yields a gross revenue 19 per cent. larger. Our collections give an average of Rs. 2-8 per beegah, whereas his amount to

Rs. 13-5 per beegah. It is also undoubted that his collections are made in the manner most oppressive to the people. In many parts the produce is shared in kind, and the Gaekwar's officials attach the crops when ripe and prevent their being cut till security has been furnished, and various petty exactions have been submitted to. If a man raises two or three crops from his land the process is repeated with each. The demands, where in cash, are often quite arbitrary, and composed of a variety of complicated cesses and items which the cultivators can ill understand. The obvious result of such a system is, that we have 77 per cent. of our culturable area in cultivation, while the Gaekwar has only 40 per cent.

Another method of comparison, and a test of the correctness of the above statements, is afforded by the deed of partition of A. D. 1751 between the Peshwa and Gaekwar, and the schedule appended to the Treaty of Bassein. The revenue of 14, of the pergunnahs retained by the Gaekwar is shown in the former as Rs. 5,92,500 whereas I have ascertained that it is now Rs. 24,85,000, being an increase

of 310 per cent. Only three of the pergunnahs in that list, which we now possess, happen to be so shown as to allow of comparison; but I find that in them the revenue has risen from Rs. 2,41,500 to Rs. 5,44,000—an increase of only 125 per cent. But that this is a reliable average for the whole is clear by reference to the Treaty of Bassein, which shows that the seven talookas already referred to, and yielding (see statement) Rs. 20,95,000, were then estimated at Rs. 9,52,000, that is, the revenue has increased 120 per cent. in our time. That even these increases are in our case greatly attributable to increased cultivation, but in the Gaekwar's to increased demands, following the rise of prices and leaving the ryot now, as formerly, a bare subsistence, may be safely inferred from the large proportion of the Gaekwar's land still uncultivated.

It may be objected that the Gaekwar's is an extreme case. There are, no doubt, many of the indigenous States of Guzerat which are far better administered and more liberal; but still, as far as I have seen, I think that the average of their revenue demands is considerably above ours. And the same is observable in all alienated villages within our own territory.

The truth of this conclusion is supported by the very appearance of the two territories; the British border seeming to me, in nine cases out of ten, to be distinguishable as we cross it by road or rail, in the extended cultivation and more well-to-do appearance of the people, their dress, and their dwellings.

I will now turn to the second head, and mention very briefly a few instances of the preference of the people for our rule, which I believe to be a general sentiment wherever they have the opportunity of comparing the two.

- (a) I was all through the Powaghur Punch Mahals in 1856, only $2\frac{1}{2}$ years after we had received the management of them from His Highness the Scindia, and found the people everywhere openly expressing their satisfaction at the change.
- (b) When, in 1862 and 1863, I was Collector of Ahmedabad, which is a district almost entirely surrounded by Native States, the immigration from the latter was considerable. In one instance a batch of immigrants founded a village.
- (c) Two years ago the oppression in one of the Gaekwar's pergunnahs, contiguous to this district, was so intolerable that the people left a large proportion of their land waste, and applied in large numbers to my predecessor for permission to settle in our territory.
- (d) I have at present before me officially a proposal from certain subjects of the Gaekwar to take up the whole waste land (91,000 beegahs) of the pergunnah of Mandvee in this district, and bring it into cultivation within a fixed time, peopling it with immigrants from the Gaekwar's territory. They offer to bring 5,000 this year.

There can be no doubt that immigration would be far more extensive even than it is if, on the one hand, it were our practice to encourage it by assisting the new comers to build huts, sink wells, &c.; and on the other, the Gaekwar did not resort to the severest measures to put a stop to it—confiscating all property left behind, and often imprisoning the relatives of the emigrants into the bargain.

The comparisons which I have hitherto made have been fiscal only. As regards civil and criminal justice no statistics are available, and I can only affirm that I believe the superiority of our system (in spite of certain drawbacks, such as ignorance of the language) to be as marked in this particular as in the other, and to be as generally admitted by all foreign subjects who have an opportunity of observing it. In some Native States very creditable efforts at improvement are being made, though the result is still trifling; but in the majority the old system still flourishes, though in one or two instances it is cloaked by a semblance of complete reform, and the old officials are at their old practices under new high sounding titles, and with codes at their elbow.

In conclusion, I much regret the delay which has occurred in submitting this report, which is owing to the difficulty of obtaining statistics.

COMPARATIVE STATEMENT of the present Condition of certain British and Gaekwar Territories.

BRITISH TALOOKAS.										GAEKWAR'S PERGUNNAHS.												
Num- bers.	NAMES OF TALOOKAS.	AREA.		Revenue from all sources.	RATES.						Names of PERGUNNAHS.	Num- bers.	AREA.			Revenue from all sources.	RATES.					
		Culti- vated Land.	Unculti- vated Land.		Dry Crop.		Garden Crop.		Rice Crop.				Culti- vated Land.	Unculti- vated Land.	Total.		Dry Crop.		Garden Crop.		Rice Crop.	
					From	To	From	To	From	To							From	To	From	To	From	To
1	Oolpar -	Begahs. 1,47,997	Begahs. 27,293	Rs. 5,45,479	RS. A. 1 8 7	RS. A. 1 8 3	RS. A. 3 8 10	RS. A. 0 0 3	RS. A. 0 10 6	Wusravee	1	Begahs 29,877	Begahs 78,587	Begahs 1,08,464	Rupees. 2,76,000	RS. A. 5 0	RS. A. 8 0	RS. A. —	RS. A. —	RS. A. 15 0	RS. A. 17 0	
2	Soopa -	66,301	18,056	84,357	2,68,294	1 14 5	0 3 0	16 0 1	14 17 0	Buleswur	2	31,426	43,689	75,115	3,50,000	7 0	12 0	25 0	33 0	25 0	30 0	
3	Bulsar -	2,00,002	39,912	3,34,996	0 8 8	0 3 0	14 0 1	8 14 0	3	Timba	3	21,275	20,022	41,297	1,57,000	7 0	10 0	20 0	25 0	15 0	22 0	
4	Mandvee -	67,868	91,736	1,59,604	1,27,562	0 10 5	12 —	—	3 0 6	Murolee	4	13,621	24,684	38,305	1,60,000	10 0	11 0	25 0	35 0	15 0	25 0	
5	Chowrasee -	33,651	1,446	35,097	1,69,989	4 1 —	7 1 —	7 10 —	—	Galla	5	15,447	41,483	56,930	1,95,000	10 0	19 0	20 0	25 0	15 0	17 0	
6	Bardolee -	1,74,729	31,755	2,06,484	4,02,606	3 8 —	6 12 —	—	9 6 —	Gundeeve	6	18,115	17,134	35,249	1,80,000	15 0	17 0	35 0	45 0	25 0	30 0	
7	Chicklee -	1,54,331	38,442	1,92,773	2,46,445	2 3 —	6 12 —	—	8 13 —	KusbaVuriav	7	5,443	4,364	9,807	54,000	9 4 —	—	9 4 —	—	9 4 —	—	
										" Nuwsaree	8	4,219	3,616	7,835	59,000	15 0	17 0	34 0	45 0	25 0	30 0	
										Kamragee	9	17,085	20,463	37,548	2,21,000	4 8	20 0	22 0	25 0	15 0	25 0	
										Telalee	10	30,079	11,131	41,210	3,00,000	15 0	20 0	25 0	33 0	20 0	25 0	
		8,44,879	2,48,640	10,93,519	20,95,371							1,86,587	2,65,173	4,51,760	19,52,000							
		Add Nuzzurana			-	-	-	-	-	-	-	5,32,900										
		Total			-	-	-	-	-	-	-	Rs. 24,84,900										

T. C. HOPE.

From the HON. A. A. ROBERTS, C.B.C.S.I., Judicial Commissioner, Punjab,
to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA,
Foreign Department—(Dated Murree, August 29, 1867.)

YOUR letter of 1st July invites me to supply you with any statements which my experience may enable me to furnish, to show the estimation in which the system of British administration in India is held by the Natives as compared with the method of government pursued in the Native States.

No mean authority on this subject, Sir John Malcolm, expressed the following opinion of the effect upon the Natives of the introduction of English rule :—"Our success and moderation, as compared with the misrule and violence to which a great part of the population of India have for more than a century been exposed, have at this moment raised the reputation of the British name so high that men have forgotten their feelings of patriotism in the contemplation of the security and prosperity they enjoy under strangers."

The above remark is as true now as it was when it was uttered 40 years ago. The same effect occurs as every new province comes under British sway. The people feel thankful that every man can sit under his vine and under his fig tree, and for the peace, security, and order which reign.

Then it is notorious that the inhabitants of Native States do, more or less, immigrate into British territory, and rarely return to their own countries, unless the latter happen to come under British rule.

This was the case with Oudh (*vide* last census report of the North-Western Provinces), and more recently with Bhawalpore. The Deputy Commissioner of Montgomery (late Gogaira district) informs me that numbers of persons who had settled in his district to escape the misrule which used to prevail in Bhawalpore, had returned to that country since it had come under the management of the British Government. There are numerous villages in the Sirsa and Hissar districts which have been founded since we took possession of that part of the country, and are inhabited chiefly, if not entirely, by immigrants from Bikaneer, Bhawalpore, and, to a more limited extent, from the Sikh States to the north. I may cite also the teeming colonies of Cashmere shawl-weavers who form no inconsiderable portion of the inhabitants of the cities of Umritsur and Loodiana, and who are also settled in great numbers at Jelalpore, in the Goojerat, at Soojanpore, in the Goordaspore, and at Noorpore, in the Kangra district. It is no secret that these people, with their families to the number of many thousands, will not return to their own country on account of the oppression and exactions to which they are there liable, and that their numbers are constantly increased by fresh immigrants. Another proof of the sense of security under British rule is the number of foreign Pathan soldiers in the Punjab frontier force; the number of Affghan merchants who annually penetrate with their goods as far as Calcutta, and the increasing numbers of Hazaras "from the hills beyond Cabool," and of Jadroons "from a wild district in the vicinity of Kelat-i-Ghilzie," who used formerly to get no further than the Peshawur Valley (see paragraph 292 of Major James' Report on the Settlement of the Peshawur district), but are now to be met with in crowds as contractors and navvies along the Grand Trunk Road as far as Lahore, and wherever there are Public Works in progress.

Again, thousands of jampanees and thousands more of workmen and labourers of all sorts stream in from Cashmere to Murree, and from the neighbouring Native States to Dalhousie, Simla, Mussoorie, and Darjeeling, for several months every year.

It cannot, I think, be doubted that the Natives, whether of our own territories or of Native States, do feel that there is greater security for person and property, and more peace, order, and regularity under British, than under Native rule.

It is some years since a Native gentleman, a Mahomedan of Moradabad, remarked to me that in four respects our Government was superior to any Native administration. These were, *duftur*, *lashkar*, *shâh-râh*, and *tankhah*. Certainly since the days of Akbar, India has seen nothing deserving the name of a *duftur* or of a *shâh-râh*, until these were introduced by ourselves. Todur Mull had no idea of fixed salaries paid monthly, or of superannuation pensions. Hyder Ali, or Scindia of old, or Runjeet Singh, with all their appreciation of standing armies and of French and Italian Officers to discipline them, were far behind us in military organization. I believe that all Natives, especially after conquest or annexation, appreciate the four cardinal points in our administration which excited the admiration of my Moradabad friend. They justly consider our *bundobust*, our arrange-

ments in these respects, very superior to any analogous Native institution; but they are not slow to perceive our weak points even in these matters.

I think, too, that they have a general idea of our good intention, our sense of justice, our moderation, and our great power. I believe that these sentiments and feelings induce large numbers of foreigners from ill-governed Native States to settle in our territories. I have no doubt that for one instance of immigration from British to Native territory thousands of instances of immigration from Native into British territory may be adduced. Still I question whether the assertion made in your third paragraph, that the masses of the people are incontestably more prosperous, "and (*sua si bonâ norint*) far more happy in British territory than they are under Native rulers," is not too broadly stated.

Certain sections of the people, as the smaller landed proprietors or a portion of them, and also some of the trading classes, are perhaps better off than they were; but the masses,—the tenants, and farm-labourers, artisans, domestic servants, and others,—earn no more in British territory than elsewhere, aught but a bare subsistence for themselves and their families. The price of food and of all the necessities of life has risen so enormously within the last few years, that I doubt, although there has in some parts been a proportionate rise in wages, whether the masses are so prosperous as they were before the mutiny, or as they used to be under the Native Governments. An intelligent Native observed to me the other day that it was the general remark that famine prices had prevailed for several years. I have certainly observed that for the last six or seven years, the average price of wheat-flour in the North-Western Provinces and in the Punjab has not exceeded 18 or 20 seers for the rupee, while the price of rice in Bengal has been rather dearer. These rates are to the masses famine prices, and the people feel and say that these prices are one result of British rule. Another remark which the same individual made to me was that the idea was very prevalent that sickness had greatly increased under our rule; that people were not so robust as they used to be, and that they rarely now-a-days attained to an old age.

I have long been under the impression that the mortality among natives is excessive, and the census of the North-Western Provinces, which was taken in 1865, and which shows a decrease of upwards of a quarter of a million on the population of 1853, tends to confirm this view. It is unreasonable to attribute this diminution either entirely, or in any great measure, to the mutiny. A decade has since passed, and there has been ample time for an increase of population. The people talk of these things and attribute them partly, if not entirely, to a visitation of God, consequent upon the introduction of British rule, and draw an inference unfavourable to it.

I accordingly see reason to doubt whether the people at large either think themselves, or really are, more prosperous or more happy under our rule than they were under Native Governments. I have no doubt myself that India is progressing towards material and moral improvement; but I do not think that we have done all that we might and ought to have done, nor have we been at the pains to convince the people of what we are doing for them. The gulf between us and our Native subjects is becoming wider year by year. It is wider in Bengal than in the North-Western Provinces, and it is wider in the latter than in the Punjab. It is becoming wider every year in the Punjab. Our executive Officers, partly from increase of work, and partly either from want of inclination, or of not understanding the necessity and advantage of friendly intercourse with the people, see less and know less of them than formerly, and they know less of us and misunderstand us and our motives and acts. We needed the stimulus which the observations of Lord Cranborne and Sir Stafford Northcote are calculated to give. The discussions in the Council of the Secretary of State for India regarding the Mysore succession, and the debate which followed in the House of Commons, will not be without good effect if they arouse the Government and all its European Officers to the necessity of greater intercourse with, and knowledge of, and sympathy towards, our Native subjects.

The following words of Sir John Malcolm express so exactly my views of our duty towards the people of this country that I cannot do better than quote them:—
 "The people of India must, by a recurring sense of benefits, have amends made them for the degradation of continuing subject to foreign masters; and this can only be done by the combined efforts of every individual employed in a station of trust and responsibility, to render popular a Government which, though not national, has its foundations laid deep in the principles of toleration, justice, and wisdom."

From the HONOURABLE SIR D. F. MACLEOD, to the UNDER SECRETARY TO THE GOVERNMENT OF INDIA, Foreign Department—
(Dated Murree, September 5, 1867.)

WITH reference to your confidential letter of the 1st July, which I have been longer in replying to than I could have wished, I annex an abstract showing approximately the number of persons who have emigrated from British territory to Native States during the last ten years, and *vice versâ*, as such a document affords perhaps the most tangible evidence obtainable in the form of statistics to indicate the amount of estimation in which our rule is held by the people of this country as compared with that of Native States around us. The letters and documents from which the data comprised in this abstract have been taken I do not think it necessary to send, as they contain in fact nothing whatever of real importance which is not more clearly exhibited in the accompanying Tabular Statement.

From this document it appears that the number of persons who have immigrated into the Punjab from adjoining States is five times greater than that of those who have emigrated. While a large proportion of the latter consists of those who have found it necessary or expedient to abandon British territory, in consequence of the part taken by them in the events of 1857-58, and of persons belonging to trades, such as those of jewellers, silk-weavers, armourers, gunpowder makers, pyrotechnist, &c., for which there is a greater demand at Native Courts than in British territory; much reliance cannot perhaps be placed in the correctness of these returns, and the movements of the higher classes are probably hardly shown in them at all. But there can be no doubt whatever that those who have sought British rule are vastly more numerous than those who have abandoned it, while it may be added with truth that the coercive measures adopted in some Native States towards intending emigrants renders it oftentimes very difficult for these to carry out their wishes.

Another criterion by which some opinion may be formed on the subject is derived from the feeling evinced by populations who have been transferred from British to Native rule in consequence of alienations of territory. One of the tracts so circumstanced is the tálOOKa or district of Kote Kapura, made over to the Rajah of Furreed-kote. From this tract the stream of petitions to our authorities, attributing oppression to the Rajah, has been incessant, although no action has ever been taken on them by those officers except in the way of friendly advice. An abstract in English of the purport of some of these petitions accompanies. Portions of territory, more or less considerable, have in like manner from time to time been made over to the Rajah of Bikaneer and other chiefs; and in few, if any, of these instances have the people thus transferred, failed to evince dissatisfaction, though only by verbal representations, or by anonymous petitions, of which no record has been retained, not daring to make known their complaints, as the subjects of the more pliant Rajah of Furreed-kote have done.

On the other hand, where territory under Native rule has been transferred to us, I have never heard of any symptoms of discontent or dissatisfaction having been evinced by the people, save such mortification as may have been shown by the military classes and retainers of courts, where territory has been acquired by conquest. On the contrary, I believe that the feeling evinced by the bulk of the population, on the first assumption of their territory by the British Government, has in every instance been one of satisfaction. And I do not think that any one who really knows India will attempt to deny that the security, both in person and property, the freedom from violence or oppressions of every kind, the stability of established order, the encouragements to trade and progress, and facilities for accumulation and utilization of capital afforded under British rule, are infinitely preferred by the bulk of the people to the comparative lawlessness existing in the Native States by whom we are surrounded.

The rule of the Sikhs has always been, as a rule, proverbially grasping; and this character remains impressed on the neighbouring government of Cashmere, of which the founder was an officer of the Sikh Government. Discontent is, without doubt, very general throughout that country; and although the difficulties in the way of leaving it are very great, many have succeeded on doing so, and many more would do so had they the power, though it is stated by the Deputy Commissioner of Sealkote that the proportion of the produce left to the cultivator in Cashmere is greater than under us—a statement which I find it difficult to believe correct. The principal Cis-Sutlej Chiefs and the Rajah of Kuppoothulla have made considerable progress of late years towards the adoption of more enlightened principles of government; but still it may well be doubted whether their subjects would deliberately prefer their rule, if transfer to the British were offered them.

The only other considerable States adjoining the Punjab, setting aside the Affghans and Belooches, are those of Rajpootana and that of Bhawalpore. In the latter such was the state of anarchy which had been reached when the late Nawab died (as is generally believed by violence) that, at the earnest solicitation of the ministers themselves, our Government deemed it necessary last year to assume charge of the State during the minority of his successor; since which period large numbers who had emigrated into British territory to avoid the tyranny of the Nawab have returned to their homes, while immigrants have also been received from other adjoining territories. In regard to the States of Rajpootana, others are more competent than I am to express an opinion; but our subjects have certainly evinced no preference for their rule.

The frontier tribes of Affghanistan and Beloochistan, and the petty Hill Chieftains of the Sub-Himalayan ranges alone remain. Of the former it is probably needless to make mention here, as the state of things amongst them is opposed to all ideas of civilization; but the latter are perhaps the portions of Native territory adjoining us, which are, on the whole, most contented; both chiefs and people being comparatively simple and mild, and the feeling of claniship and devotion to their Chief being very strong amongst these hill tribes. Even there, however, there are exceptions to this spirit, and there can be no doubt, at all events, that the hill races, under the rule of Puttiala, would hail with joy a transfer to that of the British.

While, however, fully admitting all the above, I deem it right to remark, as I have been required to offer any statements on the subject which my experience may enable me to furnish, that these results are attributable to the more or less arbitrary and uncertain character of the Native Governments we see around us; that the very presence of the British Power relieves these from many of the restraints which existed when they and their subjects were left entirely to themselves, thus rendering some of them more oppressive and indifferent to their people's welfare than they might otherwise have been; and that if the comparison were made with really well governed Native States, and such I believe are to be found, the comparison might not, in the estimation of the people, be altogether in favour of the British Government, save in so far as the continuance of just rule in a Native State where there are no constitutional guarantees must ever be dependent on the character of the Chief, and therefore wanting the stability of British rule.

Such being my impressions, it will be readily understood that, if the remarks which have elicited this discussion were intended, as I understand them to have been intended, to caution Englishmen against the belief that the principles of administration which are most congenial to them must necessarily be so to the populations who have here been committed to our charge, then I consider those remarks to have been appropriate and wise; and if they should lead us to pause and consider what portions of our policy are least appreciated or most distasteful, and whether, and in what manner, these can be advantageously modified, then their enunciation will, I believe, prove to have been eminently beneficial.

The second paragraph of your letter mentions some of the causes calculated to render our rule unpopular with the people of India, and in the tenor of that paragraph generally I quite concur. While, however, I fully admit that the causes of our unpopularity are mainly the result of our being foreigners and aliens to the people, yet I do not consider that this unpopularity is the necessary result of that fact, but that it springs from the policy and demeanour which our foreign training and proclivities, and our want of familiar acquaintance with them, lead us to adopt. And this is a distinction which it appears to me very important to bear in mind, as, if it be accepted, there will then be much more hope for the future than if we allow ourselves to settle down in the conviction that the two races can never be otherwise than antagonistic. Where an Englishman has shown a warm and rational sympathy with the people, they invariably respond in a manner which is unmistakeable, regarding him with feelings nearly akin to affection; and in the case of the Government, the same result would, I feel assured, follow from the same cause; for the people already fully appreciate and admire its love of justice, its honesty of purpose, and its stability, and would, I believe, be quite prepared to accord to it their devoted loyalty, if they could perceive in its principles of action that spirit of sympathy which it is easy to invoke, but very difficult to describe. The more, in short, we study the people, consult their wishes and feelings, and take them into our confidence, the more shall we soften or remove that alienation which difference of race at present begets.

Having thought it right to say thus much, it will be well, perhaps, if I instance a few of the more prominent points in respect to which I believe the people to consider that we have evinced a want of sympathy with them.

Under oriental rule, from scriptural times until now, the Government has ever been regarded, not only as the fountain of honour and dignity, but as the source from whence bounties and privileges were largely to be obtained. This position our Government has in a great measure virtually abnegated, and although of late years it has somewhat relaxed in this respect, its action in so doing is condemned by many of our countrymen. The feeling of the Oriental in this matter, and generally in regard to the relations between superiors and inferiors, differs greatly from that of the Englishman, in so much that service on small pay, with the prospect of frequent presents, is the usage of the country, and preferred by all parties, while to an Englishman it would be intolerable. Grants of land and allowances under Native rules, however solemnly declared to be perpetual, were always, except in the case of religious endowments, practically considered as resumable at pleasure, and withdrawn almost as freely as they were in turn bestowed—a state of things which, from its very uncertainty and the excitement attending it, appears to have a charm for the Oriental.

Such predilections we certainly have not indulged, and there is hardly any point on which the Natives have more frequently animadverted in their conversations with me than upon this, that our Government has ceased to secure the attachment of influential men by conferring grants and largesses. A few years ago, while riding out at Lahore, I entered into conversation with two respectably dressed Sikhs who were walking on the side of the road. One of them in particular appeared depressed and morose, and on my asking him the cause of this, he said, with great bitterness, “Under your Government there are no rewards.” The incident was a trifling one, but owing to the man’s demeanour, it made a great impression on me, and has often made me feel increased regret when cases have come before me in which “Zemindar Inams,” or grants made by former rulers to leading men in each tract of country, as a sort of retaining fee, have been resumed under us. The abstract sentiment, that a Government has no right to bestow upon a few the income which properly belongs to the public at large, has led us, from the most conscientious motives, to inquire into the validity of even small grants with a rigour, and to resume them with a freedom, which have given much offence, especially in the case of endowments; while, when grants have once been declared valid, they have in a large majority of cases been confirmed by forms so rigid and legal as to become the subject of contention in our Courts, even as against the Government itself, so that the people cease to regard them as gifts from the Government. In thus acting, we have without doubt been guided strictly by a sense of right and justice; but the course pursued, nevertheless, conveys to an oriental mind the impression of a burlesque of liberality.

Another point on which the system pursued by us is distasteful to the better classes of the people, is the equality of all before the law, and the difficulty of obtaining redress for outraged feelings. On visiting once a Police station in the interior of the Umritsur district, I found that a *mazhabi*, or Sikh sweeper, had been arrested on a charge of having poisoned the bullocks of a petty Sirdar, the chief proprietor of his village. I entered into conversation with this gentleman, and found him in a great distress, asserting that these bullocks constituted almost all the property he possessed, and that they had been destroyed by his own servant merely for the value of their skins. I took him inside the station enclosure that I might hear what the prisoner had to say; but on our reaching him, the latter poured out a volley of most offensive abuse on the Sirdar, who remarked to me in great agony, “It would be better to die than to live under your Government; this could have happened under no other.” Society is no doubt gradually devising means for correcting this state of things, or becoming reconciled to it; and we may look forward to the day when the love of independence will be as strong and as genuine in the breast of the Indian as of the Englishman. But in the meantime we must be prepared to incur odium on this point, as it is one on which we cannot well make any surrender.

An intimate acquaintance with the people might suggest numerous particulars, in which our principles and practice are in like manner distasteful to our subjects; but even if I could profess to have such acquaintance with them, it would not be necessary thus to expand these remarks; and the only other point which I will here notice is, in my opinion, by far the most important of all. I allude to our allowing the people but little, if any, real share in the management of their own social and municipal affairs, which they undoubtedly feel to be a great indignity and injustice, and which in very many ways subjects them to the most disagreeable consequences.

Until very recently, our stipendiary officials alone possessed any authority or discretion whatever, the people being virtually helpless as against them. And while I was attached to the North-Western Provinces, I well know that for the most part

heads of villages, though charged by law with heavy responsibilities, were practically powerless to appoint even a Chowkeedar, or village watchman, save at the dictation of the Native head of the Police. In the large city of Benares, in like manner the *Phátakbandies* or city watchmen, instead of being as formerly the servants of the municipalities and controlled by them, leagued themselves largely with the bad characters of their ward and with the Police, and set the people with defiance, so that in some cases they actually levied black mail upon the inhabitants, and it was not until the system was introduced of the Magistrate going down once a week to the Kotwallee, or head City Police Station, and there discussing with the Meer Mohallahs and other principal men of the several wards, the appointments, rewards, punishments, or removals of *Phátakbandies*, and the affairs of their respective divisions generally, that this state of things was put an end to.

Much has been done of late years in many parts towards remedying this state of things by the appointment of Honorary Magistrates, Municipal Committees, Zaildars, Chowdries, &c., investing all with certain defined powers or functions, and allowing to some emoluments more or less considerable. I know of no move made by us which has been so acceptable to the people; and all that I would desire to see is, that the efforts which have been made in this direction thus far be steadily continued and extended as opportunity may permit. The matter is one surrounded with difficulties, not only in itself, but still more owing to the feelings and opinions of a large portion of our own countrymen. Such precision, correctness of practice, and soundness of judgment, cannot be expected from the above class of functionaries, as from those of a superior and special training; and while we are strenuously endeavouring to raise our judicial and administrative systems to a standard suited to European requirements, it is mortifying to have to submit to the crudenesses which are to be looked for, occasionally at all events from such persons. Nevertheless, in order to do justice to the people in this matter, I believe it to be indispensable that we so legislate as to admit of the existence of an authorized machinery, both judicial and administrative, of an inferior order, for ministering to their wants and requirements in connexion with the social and other affairs of their every-day life; and while endeavouring gradually to improve this machinery to the utmost, that we be content in the mean time with such standard of merit as satisfies and suits them.

The subject is a vast one, on which it would be out of place to enlarge here. But I would remark that I consider such a course to be desirable and necessary, not only to meet the wants and wishes of the people, but to educate them as a nation. For whatever education we may give them in our schools, it will have but little national effect, or perhaps an injurious one, unless the people be at the same time trained to habits of vigorous thought and self-reliance by taking some share in their own administration. Many, I know, are of opinion, that we shall meet all requirements by educating the higher classes, and opening to them distinguished posts in our councils and administrations. But I cannot assent to this view; and while highly approving of these very excellent and necessary measures, I nevertheless believe that until the masses be more or less trained in the manner pointed out to robust mental habits, and more or less imbued with the enlightened views of the West, which they will thus inevitably to some extent imbibe, these measures will of themselves secure but very partial results, and any Native members whom we may appoint to our councils will either be no real representatives of the people at all, or will evince a puerility and contractedness of mind which will altogether impair their usefulness.

Under former Governments and under good Native Governments of the present time, we shall almost everywhere find a republican spirit prevail throughout the village and municipal administrations; but under us this spirit has been virtually suppressed. Republican as the British nation is, it seems to me especially appropriate that we should endeavour to retrieve this error, and to recognize and respect that sentiment to whatever extent it may exist amongst our subjects here; and this course appears to me to be all the more incumbent on us, as foreigners, having but little intimate social intercourse with them, on the ground, that we shall thus afford them an opportunity of indicating their wishes and their opinions to an extent not practicable in any other legitimate and constitutional method, as well as enable them to some extent to carry out their views under our control and guidance.

How far it may be possible hereafter, or be deemed expedient, to act on these views the progress of events alone can show; but the germ exists, which is undoubtedly capable of expanding into a goodly tree, and it requires, I believe, only encouragement from Government to ensure hearty co-operation on the part of most of its own officers, together with the grateful support and appreciation of all classes of the people themselves.

ABSTRACT showing approximate Number of Emigrants from Native States to British Territory, and vice versa, during the last Ten Years.

DISTRICTS.	EMIGRATION.			IMMIGRATION.		
	Number of Emigrants to Native States.	Class.	Cause alleged.	Number of Immigrants from Native States.	Class.	Cause alleged.
Delhi - - -	-	Traders, artisans, and munshis (chiefly adherents of rebels).	The mutiny - - -	Inconsiderable.	-	-
Goorgaon - - -	-	-	-	500 (from Putteeala and Jheend).	Agriculturists.	Impoverishment and defective revenue administration.
Kurnaul - - -	-	-	-	-	-	-
Hissar - - -	-	Agriculturists	The mutiny and the famine of 1860-61 - - -	2,219 (from Putteeala, Jheend, Malairkotla, and Rajpootana).	Non-agricultural chiefly	Over-taxation and general oppression.
Rohuck - - -	-	Agriculturists	Former residents of the State.	14,225 (from Bikaner, Putteeala, Bhawulpore, and Furreed Kote).	Agricultural chiefly	Exactions of Native rulers.
Sirsa - - -	-	Two-thirds agriculturists One-sixth labourers One-sixth shopkeepers Cashmere weavers	Inducements offered to settle on waste lands. Invited to go to Jheend, but most have returned.	733 (chiefly Patiala)	Chiefly agriculturists and labourers.	-
Umballa - - -	-	-	Prospects of obtaining land	Few.	-	-
Loodhiana - - -	-	-	-	Some 450 residents of Native States in service in this district.	-	-
Simla - - -	-	-	-	-	-	-
Jullundur - - -	-	Agriculturists and sweepers	-	100 families about 500 persons (from the Hill States).	Agriculturists and one or two bankers.	The system of forced labour, and the exactions of Kardars.
Hoshiarpore - - -	-	-	-	-	-	-
Kangra - - -	-	-	-	-	-	-
Umritsur - - -	-	Chiefly weavers	Inducements held out by the Rajah of Jheend.	3,000 (chiefly Cashmeries)	Weavers, tailors, and artisans.	Superior wages obtainable in British territory.
Sealkote - - -	-	Agriculturists	Having relatives in Jummoo and prospects of obtaining land on more favorable terms.	200 (from Jummoo)	Cultivators - - -	Poverty and the forced labour system.
Goordaspore - - -	-	Agriculturists	Invitation of relatives	200 families (equal 1,000 souls).	Agriculturists	Exactions and oppression of Jummoo authorities.

ABSTRACT showing approximate Number of Emigrants from Native States to British Territory, and vice versa, during the last Ten Years—*continued*.

DISTRICTS.	EMIGRATION.			IMMIGRATION.		
	Number of Emigrants to Native States.	Class.	Cause alleged.	Number of Immigrants from Native States.	Class.	Cause alleged.
Lahore	-	-	-	1,000 from Cashmere	Cashmere labourers and a few traders and weavers.	
Ferozepore	Very few	-	-	Considerable number (say 1,000) from the Sikh States.	Not stated	"Difference in revenue rates and system and greater security for persons and property in British territory."
Goojranwala	-	-	-	Few.		
Mooltan	A few (to Bhawalpore	Bankers and traders (many have returned).	Facilities of trade	Considerable numbers (say 1,000).	Agriculturists	To avoid the oppression of the Bhawalpore officials.
Montgomery	300 (into Bhawalpore and Bikaner)	Agriculturists	Drought and failure of irrigation canals.	200 (from ditto)	Agriculturists.	
Mozuffergurh.	-	-	-			
Dera Ismael Khan.	300 (to Bhawalpore	Pathans	To take service in the army.	A few merchants from Jodhpore, &c.		
Dera Ghazi Khan	-	-	-	A few from Cabul, Candahar, &c.	-	To escape the tyranny of the Native rulers.
Bunnoo	-	-	-	900	Chiefly tailors from Cashmere, and Affghans.	Prospects of better livelihood.
Rawul Pindee	-	-	-	300 (from Cashmere)	Artisans and weavers	To escape exactions.
Guzerat	150 (to Jummoo)	-	Chiefly fugitives from justice.			
Jhelum.	-	-	-			
Shahpore.	-	-	-			
Peshawur.	-	-	-			
Hazara.	-	-	-	162 families (equal to 810 persons).	Independent tribes.	
Kohat	-	-	-			
Total	5,336	-	-	27,297.		

(Signed)

T. H. THORNTON, Secretary to Government, Punjab.

Complaints against Rajah of Furreed-kote.

The Rajah has ruined his subjects by quartering troops on them.

Forcibly took away a horse from one Chetan Singh, and imprisoned the man and two of his relatives. He collects revenue without following any regular system, and falsely accuses people of offences and plunders them. Horses, camels, &c., he appropriates to his own use without paying for them.

Debia and Rûpa were punished on a charge of theft in British territory. The Rajah also imposed fines on their families, and expelled the latter from their houses. The Rajah exacts illegal cesses.

For the last nine years, from every village, he has collected 4 or 500 Rupees in excess of the proper demand. The accounts are not settled. He does not allow Lumbardarí dues; sells rights of cultivators, and appropriates the proceeds of sale himself. In every village 15 ghumáos of land are cultivated for the Rajah, and the produce goes to him. Nevertheless, revenue is realized on this land also along with the village revenue; and when complaints were made to Commissioner, he imprisoned petitioners' relatives.

The following cesses are levied from each village:—

Supplies of one goat every half-year.

Ditto of coarse cloth without payment.

Ditto of ghee, according to capabilities of the village, every half-year.

Ditto of hemp.

Ditto of hides.

The produce of one kanal of gram, môth, &c., per plough:—

Supplies of fodder, one load per plough.

Ditto of tirnee tax (cash).

Ditto of milk and curds from every house in every village.

Ditto of atrafi cess (tax on artisans), camels, horses, cows, and bullocks at pleasure.

Begár (forced labour).

A piece of long timber from every Zemindar.

Roads have to be repaired without payment.

The Rajah collects excessive revenue.

Produce of two kanals is taken, and no deduction given in revenue on that account; four cart-loads of fodder annually taken from each cultivator.

Manda Singh and others. Dated 3rd April 1857.

One-fourth produce in the first year of newly-broken land.

The Rajah forcibly seized a bullock belonging to Dyal Singh, valued at Rs. 60.

Appropriates produce and collects revenue on land abandoned by any cultivator.

Collects (zakat) excise.

Makes us pay Chowkeedars (watchmen).

Enforces *Begár* (forced labour).

Took away Jiwan Singh's horse, value Rs. 100, without payment.

Demands nuzzerana for a Lumbardarship.

Has imprisoned the father of one of the petitioners, and placed guards on his house. Has turned them out of a house which they had built at Maharana at a cost of Rs. 1,300.

One of the petitioners complains that he is made to pay the whole revenue, although 600 ghumáos of his land has been taken away from him and made over to the "Bukshree" on payment of a nuzzerana of Rs. 200.

Six hundred ghumáos more have been transferred to other Zemindars.

His brother, Kanh Singh, has been put in prison. Milk was demanded, but when offered to be given it was refused and a fine of Rs. 40 taken.

Their villages have been over assessed. They have been deprived of puchotra dues (5 per cent. on collections paid to heads of villages by the British Government, atrafi dues (tax on artisans), four hundred ghumáos of cultivated land. When a man dies, notwithstanding leaving heirs, his estate is confiscated.

Najib Singh and others (40 men in all), and Amán Singh and others (86 men). Dated 12th September 1861.

The Rajah taxes trades in addition to collecting choongee (town duties). The whole of the proprietary rights of Mouza Bhari which belonged to us he has made over to others.

Levies a tax of 2 to Rs. 300 on every widow marrying.

Complaint against deprivation of their rights. They complained to Commissioner, Mahatab Singh and others, who commended them to the Vakil. But they never obtained redress.
15th January 1865.

In a case connected with a woman, he was fined by the Jullundur Court Rs. 20. In the same case the Rajah demands a fine of Rs. 40. A Sowar is appointed to realize the fine, and he is threatened expulsion from the village.
Kanh Singh of Kôt Kapúra.
14th January 1865.

Rajah has plundered his shop, valued Rs. 40,000; fined him Rs. 800; confiscated gram, valued Rs. 1,200, and fodder valued Rs. 1,000.
Bútakhathu of Kôt Kapúra.
13th January 1865.

Has made over his shop to complainant's brothers. Has more than once placed him in confinement; Government ordered redress. The Rajah had him beaten and demanded a razeenama.

Assessment of village raised from Rs. 160 to Rs. 700. His father has been imprisoned.
Karam Singh. 13th January 1865.

The Rajah has seized 26 cattle of his, and 500 ghumáos of land, and 2,000 maunds of grain.
Kala Singh. 13th January 1865.

Complains of being deprived of his village.
Jeet Singh. 22d September 1865.

Rajah has deprived him of 30 ghumáos of land, which he has given away to one Maluka on payment of Rs. 300.
Charat Singh and Godha Singh. 22d September 1865.

Six hundred ghumáos of land were declared free of revenue, under orders of British Government. The jumma was fixed at Rs. 262-8. The Rajah makes them pay, for the last 20 years, Rs. 412-8. They have been ruined in consequence.
Mula Singh, Jowahir Singh, and others of Kôt Kapúra.
22d September 1865.

Had a house, valued Rs. 100, at Kôt Kapúra. The Rajah sold it to a stranger for Rs. 60.
Fattah Din, of Kôt Kapúra.
Dated 25th September 1865.

His brother and himself were employed in the Rajah's service. The former has received nothing for the last 15 years; and the petitioner for last seven years; on asking for salary a fine was demanded, and petitioner's brother is in prison.

Rajah sold petitioner's house for Rs. 150 to a stranger. On petitioner's protesting, he was fined and placed in confinement.
Samand Singh, of Ilaka Kôt Kapúra (and 16 other complainants). 4th December 1865.

Complain of over-assessment and extortions. Their beards are ordered to be shaved. There are 60 men in confinement.
Sukha Mal and others, 12 men of Ilaka Kôt Kapúra.
Date not given.

Joala Pershad (an official of Rajah) exercises great tyranny.

Four more Petitions—three in 1865, 14th January; one in 1866, 22d October.

Complain of the Rajah having wrongfully transferred their lands to other parties, and seized their cattle and property.

(True translation.)

(Signed) T. H. THORNTON,
Secy. to the Govt. of Punjab.

NOTE by SIR W. MUIR, K.C.S.I., Secretary to the Government of India, Foreign Department, on the Revenue History of Pergunnah Koonch, in the Calpee District, illustrative of the comparative Popularity of British and Native Rule.—(Dated Simla, October 22, 1867.)

The history of Pergunnah Koonch, in Bundelcund, illustrates; I think, the kind of popularity enjoyed by British administration—a popularity among the masses in consequence of the comparative security of life and property, and the limitation of the demands of Government.

The Koonch Pergunnah lies about 40 miles to the west of Calpee, and, until the annexation of Jaloun, was entirely cut off by a long distance from our other possessions. It was encircled for the most part by Jaloun, and also by tracts of the Gwalior, Duttia, and Sumptur States.

The difficulty of administering a tract of 150 square miles thus isolated, of defending it from marauding inroad, and of securing its internal economy, was great. It was ordinarily visited by an European officer only in the cold season; and for the rest of the year was managed by Native officials. Nevertheless, from its cession in 1806 by the Mahrattas, Koonch prospered. It became a proverb in the North-West. It was called the garden of Bundelcund. In approaching you could almost tell the boundaries of the pergunnah by the green border of rich tillage. Its chief town was the entrepôt of commerce for all the country adjacent. The village bankers became rich, offering, indeed, a prize that sometimes proved too tempting to the robbers and dacoits of neighbouring villages. The agriculturists were substantial, the fields literally an unbroken sheet of cultivation.

When deputed, in 1840, to revise the Revenue Settlement, I found that its assessment was pitched higher than that of any district in the North-Western Provinces. The average rate on the culturable area (including fallow) was Rs. 2-12-6 (above 5 shillings and 6 pence) per acre, and on each acre under cultivation above Rs. 3. This was considerably above the rates even of Cawnpore, though highly irrigated; and in Koonch there is, from the nature of the country, little or no irrigation.

But the pergunnah was so prosperous, it had paid its revenue with such punctuality, and had recovered so rapidly from the effects of successive famines still felt elsewhere, that it seemed difficult to believe that the demand was too high. Looking mainly to the heavy rate, I diminished the assessment by about 10 per cent., remitting some 2,000 l. out of a previous demand of 20,000 l. But I had some difficulty in justifying the reduction to my superiors, and even to my own mind.

Nevertheless I had judged wrongly. I had attributed the prosperity of Koonch solely to its marvellously fertile soil. I had altogether omitted the advantage of British rule, which it was that, in the midst of oppression and misrule, had made the pergunnah like an oasis of the desert. Conversing afterwards with Mr. Thomason, he told me that he had never doubted the propriety of my having allowed a reduction. His only doubt had been whether I had not still left the demand far too high; and he foresaw that if ever the surrounding country came under our administration, the Revenue Settlement would be put to a severe test; for Koonch would no longer possess its special privilege.

That time came. Jaloun, which encircled three-fourths of the pergunnah, became British; decaying villages revived all around; wastes came under the plough; there was a great demand for labour all over Jaloun; Koonch had lost its pre-eminence; cultivators were tempted away by lower terms; rent fell rapidly; the Zemindars broke down; the revenues could not be collected; villages were offered in farm or sale, but no one would take them.

What had been foreseen by the keen eye of Mr. Thomason had come to pass. It was the prosperity and advantage of British rule, in the midst of the misgovernment and insecurity of Native States, which had attracted to Koonch capital and labour, and had made that a light revenue which, without those benefits, became oppressively heavy.

A few years after the annexation of Jaloun, a general reduction of the revenue of Koonch was forced upon us.

The popularity of our administration among the agricultural and moneyed classes is strikingly illustrated by the history of Koonch.

NOTE by C. B. THORNHILL, Esq., Senior Member, Sudder Board of Revenue, North-Western Provinces.—(Dated Allahabad, November 9, 1867.)

DURING the few years antecedent to the assumption of the administration of the Oudh Province by the British Government there was a ceaseless emigration from the territory of the King of Oudh to adjacent British districts.

Between the years 1840 and 1848 I was in the Shahjehanpore district, and can, therefore, speak from personal knowledge that not only individuals, but whole villages, abandoned their lands in Oudh and settled in Shahjehanpore, chiefly in the northern pergunnahs where much waste land existed.

So soon, however, as our rule was fairly established in Oudh, these emigrants commenced returning to their own homes, and I understand that comparatively very few remain as permanent settlers.

The same occurred in Goruckpore, where also large tracts of culturable waste offered similar inducement to settlers.

Perhaps it might be thought that Oudh was an exception to the normal Native rule, and that its maladministration cannot be taken as a fair type of average Native governments. It may possibly have presented the defects of the Native system in their most exaggerated form, but those defects are inherent in that system; and though the personal disposition or character of an individual ruler may neutralize them for a time, the result can never be permanent; and the country which, under the father, may have enjoyed peace and prosperity, is frequently plunged into the depths of anarchy on the accession of an unworthy son.

The chief point upon which Natives lay stress in comparing countries under British rule with those governed by Native rulers is the security of life and property under the former, and the stability of its conditions; while in the latter no one can calculate upon the probable permanence of anything which most nearly affects his personal welfare and interests.

It would not be difficult to supply instances of the great repugnance which Natives entertain to a transfer to foreign rule after having lived under that of the British Government. At this moment the rectification of the boundary of the Allahabad district with that of Rewah is impeded by the remonstrance of the villagers who, in the contemplated arrangement, would pass over to Rewah.

It is, I believe, also on record that the pergunnah of Goverdhun, which formerly belonged to Bhurtpoor, and which Rajah Bulwunt Singh was very anxious to have re-attached to his dominions, expressed a strong objection to being deprived of the protection of the British Government, the value of which they so highly appreciated that they considered it cheaply purchased by the payment of a higher land revenue than was demanded from them by the Bhurtpoor Rajah.

The feeling of security enjoyed in British territory is proved by the large number of wealthy men who have made their homes under its shelter.

While Oudh was under the king, all the bankers of Lucknow had branch agencies in the North-Western Provinces at which the bulk of their wealth was kept, nor could the millionaire Seth Luchmee Chund of Jeypoor ever be induced to abandon Muttra and return to his native city.

But while the Natives of Hindoostan fully appreciate the superiority of British rule in all essentials, their freedom and security of person and property, the moderation and limitation of its demands upon their resources, their personal immunity from the tyranny and caprices of an irresponsible autocrat, and the assurance of peace which is conferred by the strength of the government, they allow themselves to dwell upon and magnify some features in our system which are at variance with the usages and predilections of Orientals.

Progress, which to European ideas is essential to good government, is hateful to an Asiatic, whose attachment to traditionary customs, combined with constitutional inertness, renders the idea of any change most distasteful, and even when the resulting benefit cannot be questioned, it is held to be too dearly purchased at the sacrifice of the much-loved stagnation.

The impartiality with which the law is administered is another source of vexation among a people whose veneration for old families and high birth is excessive, and

who cannot appreciate the equity of applying the same rule to high and low, and of making the noble amenable to the same tribunal with the man of low birth.

This irritation has been increased by the encouragement and advancement given to those who profited by the means of education afforded in the Government schools and colleges. These institutions were for a long time looked upon as having a democratic tendency to confound all social distinctions, and the more respectable families refused to permit their children to learn in the same class with their inferiors; consequently for a time education in the branches qualifying for public service was monopolized by the lower orders, and many posts of influence which used to be conferred on the upper classes came to be occupied by those who had no claim to social position.

It may be hoped that much of the hostility to the Government schools has died out, and that the higher grades of the Government service will again be filled by men not only of birth but of education; it was hardly, however, in human nature to be free from the prejudices with which mixed schools were regarded, or to contemplate with satisfaction the elevation of the lower orders to official positions which enabled them to take precedence of, and exact deference from, the local gentry, who could tolerate no social intercourse with them.

Setting aside, then, the almost inevitable discrepancy between the views of Europeans and Asiatics, the antagonism of irreconcilable religions, and the mortification of alien domination, there seems no deficiency of unequivocal proof of the estimation in which the British rule is held by the Natives of India, and I believe that there are few independent States in which the mass of the people would not hail their incorporation with British territory as the greatest boon. Of course the aristocracy, who now enjoy some of the pleasures and profits of authority, would be irreconcilably opposed to a change which would deprive them of the privileges of their order, but, as a general rule, landholders, the mercantile community, and the population at large, whether in Native States, or in the territory already held by the British Crown, greatly prefer the security and reliability of our rule to the possible contingencies inseparable from that of one of their own nation.

COPY of DESPATCH from the Government of
India, dated 26 October 1867, enclosing COR-
RESPONDENCE respecting BRITISH and NATIVE
SYSTEMS of GOVERNMENT in *India*.

(*Sir Stafford Northcote.*)

Ordered, by The House of Commons, to be Printed,
25 February 1868.

[*Price 1s. 4d.*]

EAST INDIA (UNCOVENANTED SERVICE).

RETURN to an Address of the Honourable The House of Commons,
dated 19 March 1868;—for,

“RETURN showing the Number of APPOINTMENTS in the so-called
UNCOVENANTED SERVICE in *India*, with a Salary of 500 *l.* per Annum,
and upwards, held by EUROPEANS and NATIVES of *India* respectively.”

India Office, }
2 April 1868. }

T. L. SECCOMBE,
Financial Secretary.

RETURN showing the Number of APPOINTMENTS in the so-called
UNCOVENANTED SERVICE in *India*, with a Salary of 500 *l.* per Annum,
and upwards, held by EUROPEANS and NATIVES of *India* respectively.

Per Returns made up to 1st April 1867.

EUROPEANS (including Anglo-Indians)	-	-	-	-	545
NATIVES	-	-	-	-	161
TOTAL	-	-	-	-	706

EAST INDIA (UNCOVENANTED SERVICE).

RETURN showing the Number of APPOINTMENTS in the so-called UNCOVENANTED SERVICE in *India*, with a Salary of 500 *l.* per Annum, and upwards, held by EUROPEANS and NATIVES of *India* respectively.

(*Mr. Otway.*)

Ordered, by The House of Commons, to be Printed,
3 April 1868.

EAST INDIA (WEIGHTS AND MEASURES).

RETURN to an Address of the Honourable The House of Commons,
dated 13 May 1867;—for,

“ COPY of the REPORT from the COMMITTEE of WEIGHTS and MEASURES to
the SECRETARY to the GOVERNMENT of BENGAL, dated the 25th day of
July 1866;” with other PAPERS on the same subject.

India Office, }
26 November 1867. }

H. L. ANDERSON,
Secretary, Public Department.

(*Mr. John Benjamin Smith.*)

Ordered, by The House of Commons, to be Printed,
29 November 1867.

LIST OF CONTENTS.

No.		PAGE.
1	Despatch from the Government of India to the Secretary of State, dated 11th July, No. 127 of 1867 - - - - -	3
2	Letter from Government of Bengal to Government of India, dated 23rd August 1866 - - - - -	3
3	Report of the Committee of Weights and Measures to the Secretary to the Government of Bengal, dated 25th July 1866 - - - - -	4
4	Despatch from the Government of India to the Secretary of State, dated 11th July, No. 126 of 1867 - - - - -	18
5	Proceedings of the Government of India, dated 25th June 1867 - - -	19
6	Letter from the Government of Madras to Government of India, dated 27th September 1865 - - - - -	22
7	Report by Committee of Weights and Measures to the Secretary to the Government of Fort St. George, dated April 1865 - - - - -	22
8	Minute by Governor Sir W. T. Denison, K.C.B. - - - - -	24
9	„ Honourable T. Pycroft - - - - -	25
10	„ „ H. D. Phillips - - - - -	27
11	Letter from the Government of Bombay to the Government of India, dated 4th November 1865 - - - - -	27
12	Report by Committee for Weights and Measures to Secretary to the Government of Bombay, dated 26th August 1865 - - - - -	29
13	Proceedings of the Government of Bombay, dated 24th March 1866 - -	37
14	Letter from the Government of Bengal to the Government of India, dated 4th January 1867 - - - - -	38
15	Letter from Commissioner of Bhaugulpore to Secretary to Government of Bengal, dated 7th December 1866 - - - - -	39
16	Letter from Government of North Western Provinces to Government of India, dated 27th October 1864 - - - - -	40
17	Report of Committee on Weights and Measures to Secretary to Government, North Western Provinces, dated 1st September 1864, with Enclosures - - - - -	42
18	Letter from the Punjab Government to the Government of India, dated 20th November 1866, with three Enclosures - - - - -	46
19	Letter from Commissioner of Oude to the Government of India, dated 3rd September 1866 - - - - -	55
20	Report of the Committee on Weights and Measures in Oude, dated 11th August 1866 - - - - -	56
21	Letter from Commissioner of the Central Provinces to Government of India, dated 27th November 1865 - - - - -	57
22	Letter from Commissioner of British Burmah to Government of India, dated 13th September 1866, and Enclosures - - - - -	62
23	Letter from Commissioner of Mysore to Government of India, dated 28th December 1865, and Enclosures - - - - -	73
24	Letter from Sir G. U. Yule, c.B., President at Hyderabad, to Government of India, dated 18th July 1866, and Enclosure - - - - -	86
25	Letter from Secretary to the Metric Committee of the British Association, to Secretary to the Government of India, dated 20th June 1866, with two Enclosures - - - - -	87
26	Memorandum by Honourable Mr. Shaw Stewart, dated 7th February 1867	90

COPY of the REPORT from the COMMITTEE of WEIGHTS and MEASURES to the SECRETARY to the GOVERNMENT of BENGAL, dated the 25th day of July 1866 ; with other PAPERS on the same subject.

— No. 1. —

(Home Department.—Public.—No. 127 of 1867.)

To the Right Honourable Sir *Stafford H. Northcote*, Bart., Secretary of State for India.

Sir,

Simla, 11 July 1867.

IN compliance with the requisition made in your Despatch, No. 67, dated the 31st May last, we transmit herewith a copy of the "Report from the Committee of Weights and Measures to the Secretary to the Government of Bengal, dated the 25th July 1866."

Letter from Government of Bengal, No. 1673 T., dated 23rd August 1866, and Enclosure.

2. We beg at the same time to draw your attention to our Despatch of this date, No. 126.

We have, &c.

(signed) *John Lawrence.*
W. Mansfield.
H. S. Maine.
G. N. Taylor.
W. N. Massey.
H. M. Durand.
G. U. Yule.

— No. 2. —

From the Honourable *A. Eden*, Secretary to the Government of Bengal, to *A. M. Montecath*, Esq., Under Secretary to the Government of India, Simla (No. 1673 T.) ; dated Darjeeling, 23 August 1866.

IN continuation of my letter, No. 3445, dated the 14th ultimo, and previous correspondence, I am directed to forward herewith, for the information of His Excellency the Governor General in Council, a copy of the Report* of the Committee appointed to consider the question of a uniform system of weights and measures throughout British India.

*Dated 25th ultimo.

2. The Report is, in the Lieutenant Governor's opinion, a very admirable and well-considered one. There is no doubt that the changes which the Committee propose are of a sweeping and startling nature, but there is immense truth in that they urge in support of such changes—"that while a spirit of stolid passive opposition may be expected to be evoked by any attempt to change the methods of weighing and measuring, there is no reason to suppose that a sweeping change would meet with more opposition than a slight one."

3. As the desirability of a change of system is universally admitted, it is obviously better, since a sweeping or a modified change would be equally distasteful at first to the people in the interior of the country, that the change should be a thorough and efficient one, and not merely a tentative adoption to the English system, to be followed perhaps by further disturbing changes a few years later. There is, in the Lieutenant Governor's opinion, no doubt that the metric system is the best, the most scientific, the easiest to acquire, and, in fact, the only uniform system applicable to all India which it seems possible to adopt; and his Honor accordingly desires to recommend the propositions of the Committee for the favourable consideration of the Government of India.

— No. 3. —

REPORT from the Committee of Weights and Measures to the Secretary to the Government of Bengal; dated 25 July 1866.

WE, the undersigned, having been appointed to serve on a Committee for the revision of weights and measures, desire to report as follows:—

1. We have made inquiries (by no means exhaustive, but, as we consider, sufficient for our purpose) into the actual weights and measures of Bengal; we have had before us the report of the Madras Committee on this subject, dated 29th July 1839, with a number of papers accompanying it; a series of works illustrative of the French metrical system; a series of papers laid before Parliament, including the reports of several Committees of the House of Commons, furnished us by the kindness of Sir John Herschel; several pamphlets by Sir John Herschel himself; and lastly, a Report made in 1864 by a Committee appointed by the British Association.

2. We shall first consider what it is that we have to deal with, and what is the actual state of weights and measures of the country.

3. Very little has ever been done in the way of a systematic inquiry into the various systems of weights and measures prevalent in India. A work by Captain Jervis, of the Bombay army, entitled, "Indian Metrology," and published in 1836, appeared from its title to promise the Committee some valuable information on this subject; but this work, we regret to say, proves, on examination, to be a collection of unclassified facts and of baseless assumptions, which do not require further remark. We merely refer to it as the only attempt which has been made, and that far from successful, to give the Indian measures a value *per se*, apart from that bestowed by long and general usage. We consider it to be demonstrable that these measures sprang up in the country itself, most of them among cultivators of the soil and other uneducated persons; and that the diversity of tribes and occupations gave rise to a proportionate diversity of weights and measures, the various tribes choosing, as standards of comparison, various articles of common use, or parts of the human frame, as fancy or convenience dictated. Thus, in long measure, we find the barleycorn, the width of the finger, the length of a joint, the span, the cubit or forearm, the length of the foot, the length of a pace, the length of an ordinary walking stick, used as standards; and all these standards are clearly independent, though in many cases rough attempts have been made to adjust one to another. Square measure may be based on long measure, or on the amount an ox can plough, or the amount for which a definite measure of seed will suffice. Weights are based on different grains and seeds, as barley, millet, husked rice, the seed of the *Abrus precatorius*, and so on.

4. It may be inferred from this, that in so large and rich a country as India, embracing every variety of surface and every variety of industry, and including tribes of the most various origin, who have settled, for centuries back, in the places which they now inhabit; in a country, moreover, where the inter-communication between province and province, even between village and village, has always been unusually slight, every village having its local objects of worship, its local hât or bazar, and local interests far surpassing in importance any
general

general ones, a very large number of standards of weight and measure must have come into use, and a very large number of systems been founded, each upon one or more of these standards. Such is undoubtedly the case, as must be well known to Government, and as will be further seen from the several facts which we are about to bring forward, and which are mainly taken from the reports furnished to the Board of Revenue, Lower Provinces, in 1853, which have been carefully collected and analysed by Mr. Geoghegan, one of our members.

5. In *long measure* all the natural standards used in Bengal are adapted to the *hâth*, but by different scales in different districts. The *hâth* itself varies from *pergunnah* to *pergunnah*. In measuring English cotton goods a *hâth* of 18 inches, or half a yard, is naturally adopted; but native cloth being manufactured in lengths ready for wear, in the simple form of *dhoti* or *sâri*, the people have never felt the want of an accurately divided cloth measure. Where a *hâth* is required, it is generally the distance between the elbow and the tip of the middle finger of the seller. The *gaj* is a measure very frequently used; and, where it seems necessary to adapt it to the *hâth*, consists of two *hâths*, but it is generally independent. As a foundation for land measure the *hâth* and *gaj* are both used, but their extreme variation may be seen in the reports from a single district, *Furreedpore*, where two systems of land measure exist side by side, the *bigah* system and the *khada* system: the *bigah* depends on the length of a *russee*, and there are nine *russees* used apparently in different *pergunnahs*; five of these are based on the *gaj* of various lengths:—25½, 33½, 34, 37½, and 38 inches respectively; and four on the *hâth*, viz., one of 80 *hâths* of 22½ inches, one of 80 *hâths* of 23 inches, one of 81 *hâths* of the same length, and one of 150 *hâths* of 18½ inches. Again, the *khada* is determined by the length of the *nul*, or measuring rods, of which there are three species, the *Satore nul* of 11 *hâths* of 22½ inches, the *Shahjadpore nul* of 15 *hâths* of 18½ inches, and the *Nuldee nul* of 22 11-12ths *hâths* of 33 inches. Thus the *hâth* varies in a single district from 18½ inches to 33, and the *gaj* from 25½ to 38. The district of *Furreedpore* is not in any way an exceptional one, as may be seen by reference to the tables of land measure published by the Board of Revenue, Bengal; and the facts we have stated can give but a very slight idea of the diversities prevailing throughout Bengal. On measures of distance we have very few details; a *coss* is the most variable measure existing; there is no popular standard whatever; and the distances between villages are generally given by a sort of tradition, while the popular way of defining distances is by a stone's throw, or a *tir* (arrow flight), or a *dâk* (distance at which a shout can be heard), or the number of "*pâns*" which a man would chew in going from one place to the other.

6. In other parts of India the differences are not less striking, and here the useful tables of the weights and measures in the North West Provinces (much more full than those furnished from Bengal) may be consulted with advantage. In *Hissar* there are eight values for the *gaj*, from 21 to 38 inches. In *Bareilly* there are 47 values for the *gaj*, from 19·5 to 82·75 inches; and in *Benares* the diversities are as striking. Moreover, the descending sub-divisions vary everywhere, even where the *gaj* is of uniform size. Papers, pp. 179-212.

7. *Land measure* has been to some extent considered in the above; three systems appear to be in use. The ordinary one is that in which the *bigah* of 20 fathoms square, the fathom being always four *hâths*, is the most important measure. The *hâth*, however, varies exceedingly, as we have seen. The *katha* is one-twentieth of this *bigah*, the conception of it being a long strip one fathom by 20. The *katha* again contains 20 *dhurs* or square fathoms. In some places, however, the *katha* is sub-divided into 16 instead of 20 parts; and under this sub-division the *bigah* would seem to be regarded not as a square 80 cubits by 80, but as a rectangle 100 cubits by 64.

In several districts (*Pubna*, *Furreedpore*, &c.) side by side with the *bigah* exists a measure called the *khada*, divided into 16 *pâkhis*. The *pâkhi* again is 30 *kanis*, the *kani* being a square *nul* or fathom. In *Chittagong*, *Tipperah*, *Bul-loah*, and *Sylhet*, a scale of *kanis* and *druns* is in use, the *drun* containing 16 *kanis*. "The size of the *kani* varies not only in every *pergunnah*, but often in the same village, according to the nature of the tenure to be measured. This is Papers, &c., p. 119, "Tipperah."

simply the result of the difference in the length of the hâth or cubit used, and in the number of the cubits to the nul or measuring rod. The nuls vary from 7 to 14 hâths in length, and the cubits from 18 to about 22 inches. The kani varies in size from 1 rood 18 yards to 3 acres 2 roods 12 poles 2 yards." In Chota Nagpore the kani is also used; but here it is the lowest term of the series, and is as much land as is supposed to be capable of being sown with a certain amount of paddy, varying in different places from $1\frac{1}{2}$ to 5 *khandis*. Lastly, in Cuttack, the *man* or bigah is divided into 25 "ghunts," the fourth part of the kahun or side of a ghunt being a *podika* or measuring rod of a length which varies greatly in different localities. In the North West Provinces the measurement is almost exclusively by bigahs, of which the tables, professedly giving only a selection, contain 53 different values, from a bigah of 445 feet in Kumaon to a bigah of 14,641 feet in Pergunnah Sonah of Goorgaon.

8. We now proceed to *measures of capacity*, which, by the way, are little used in Bengal compared with their prevalence in Madras. Mr. Geoghegan remarks—"Here there is no uniformity whatever. Even where the names of the measures are the same in two districts, they do not stand in the same relation in both places. In the 24 pergunnahs we have kunkis, kuntis, and raiks; in Burdwan, Hooghly, Nuddea, and several other districts, kâtás, aris, pàlis, and solis prevail; though while in Nuddea there are 16 pàlis in one ari, in Hooghly there are two aris in one pàli. In Bancoorah we have mautis, chautis, and panyis; and in the Cuttack and Chota Nagpore divisions numerous local standards and scales which it is useless to recapitulate." All these are dry measures, and are believed to be, for the most part, heaped, not struck. They are based on weight, and no use is made of the very obvious connection between cubical content and linear measure.

9. *Avoirdupois weight* :—

5 sikkis	=	1 kachâ.
4 kachâs	=	1 chhatâk (chittack).
4 chbatâks	=	1 pào.
4 pãos	=	1 ser (seer).
5 seers	=	1 panseri.
8 panseris	=	1 man (maund).

"This table, with the occasional omission of intermediate weights, such as the pào, or panseri (weights, as their names show, not originally part of the scale), will be found to prevail almost without variation throughout the lower provinces. The weight of the ser varies from 40 to 120 tolaks, the tolah or rupee weight of 180 grains being thus the ultimate unit of reference. In Sylhet there is said to be a ser of a fraction less than three tolaks, used for weighing milk, ghee, &c., but this is probably an error. In most districts the weight of the ser varies according to the product to be weighed; thus in Cachar there is a special ser of cotton; and in Moorshedabad one ser is used in the weightment of raw silk, and another in that of manufactured silk.

"In the Behar Province the ser varies in weight from pergunnah to pergunnah; and it is probable that similar local variations occur within the Bengal districts, though the table does not notice them.

"But there are few traces of that variance in the relations of the several weights of the scale which is so common in England. Thus, whatever the ser may weigh, there are generally 40 seers in the man, no more and no less. In Dacca, however, it is stated that a table is used in the weightment of safflower, where the man contains 10 panseris or 50 seers. Still more curiously, in Sarun, Gya, and Hazareebagh, the panseri is said to vary in value from five to eight seers. I should like to see this statement more fully verified.

"I have failed to discover the rationale of such eccentric values for the ser as 82½ tolaks, though these values recur frequently and in districts widely separated.

"Throughout Bengal the prevalent cutcha weight is 60 tolaks to the ser.

"The variations in value of the ser seem more irregular in Behar than in Bengal proper.

"In the wild parts of Chota Nagpore they substitute the Goruckpore pice or the Mudhoosahee pice, also called dheboon (?) for the rupee as the tolah weight."

We may add that the table gives no less than 36 values to the seer in tolahs or rupee weights, there being often 11 or 12 different values in a single district. The tables from the North Western Provinces give 96 values to the seer, varying between 10 oz. 10 dwt. in the sale of opium wholesale in Baitool, to the seer of 4 lbs. 1 oz. 2 dwt. 12 grains used in Goruckpore city in the sale of grain.

10. The Bengal table of troy weight is well established; its base is 4, thus:—

4 pankhs	=	1 dhan.
4 dhans	=	1 rati.
[4 ratīs	=	1 china.]
8 ratīs	=	2 chinas = 1 masha.

In this table the absolute value of the weights varies; the masha being sometimes 1-10th, sometimes 1-12th, sometimes 2-25ths of a tolah. There are traces of separate tables of weights, as apothecaries', jewellers', and whitesmiths'; but these are local only.

11. We are now in a position to lay down definite propositions with regard to the weights and measures of Bengal; and we conclude from the facts recited—

That the existing weights and measures are of accidental and local origin, and that they do not form part of any comprehensive scheme.

That they show no special preference for any one scale, most of the series combining a decimal scale, with one of which four is the base; while such bases as three, &c., are not uncommon.

That certain terms, such as the hâth, the bigah, and the ser, are of pretty general use; and that the two latter are each terms in a series which is tolerably constant in the relations of its members.

That, however, each of these three quantities is indefinitely variable in its absolute value, differing not only in different districts and different pergunnahs of the same district, but (in the case of the hâth and ser) in different bazars, and (in the same bazar) in dealings with different kinds of articles.

That in two important departments—cubical measure whether dry or liquid, and linear measure above the hâth—no system prevails whatever.

That cubical measure is always based upon weight, but that weight bears no relation to linear measure.

That, in fact, the hâth and the seer are the recognised units of measure and weight respectively, all others being either expressible in terms of, or forced into relation with, one or other of these two.

That while a spirit of stolid passive opposition may be expected to be evoked by any attempt to change the methods of weighing and measuring, there is no reason to suppose that a sweeping change would meet with more opposition than a slight one.

That the tolah or rupee weight is an arbitrary quantity as regards the ser; and that therefore there is no absolute connection between the monetary and the ponderary systems of the country, the seer of 80 tolahs not having been by any means generally adopted.

That there exists an infinity of local usages, which must be injurious to commerce and prejudicial to the buyer.

12. We now proceed to consider the suggestions that have hitherto been made for dealing with this subject,—all of which are contained in the series of papers collected by the Home Office, with which the Committee has been supplied by Government.

13. The Governor of Bombay, Sir Robert Grant, appears to attach considerable weight to Captain Jervis's plan of fixing the length of the hâth by reference to that of the seconds pendulum, though he thinks that it would be more practicable to declare the hâth equal to half the English yard, which bears a fixed relation to the pendulum, than to fix it independently. The ser, he thinks, might be declared equal to the English pound, "and, on these bases, an entire system of

Minute, dated 12th June 1837, Papers, pp. 81-83.

weights and measures for India might be framed." He also proposes (paragraph 17) to make the rupee a basis of weight; while in paragraph 13 he deprecates violent interference with existing weights and measures.

14. These observations do not appear to the Committee to be consistent with one another. Any alteration must be an interference with existing weights and measures, which display as little system and as much variation in Bombay as here; while the two systems suggested, that based on the English pound and that based on the rupee or tolah, cannot be made to fit into one another. As we shall show hereafter, the question is as unsettled in England as it is here, while public opinion tends there strongly towards the metric system, which is already legalized; and if we adopt English weights and measures in their present unsettled state, we may very probably find ourselves deserted by England herself with a system which has no single advantage to compensate for the inevitable drawbacks of change. The advantage of the English system is considered by Sir R. Grant, writing in 1837, to consist in the fact that the standard of that system being given in terms of the length of the seconds pendulum,* it was a natural and recoverable standard. But this, as a matter of fact, is no longer the case. On the burning of the Houses of Parliament the old standard yard was destroyed and a new one constructed, "not," says Sir J. Herschel,† "by any measurement of the length of the pendulum (for in the 10 years elapsed since 1826 very grave doubts had been raised, or rather very serious sources of error pointed out, in the processes used for the purpose on the former occasion), but by an assemblage and most careful comparison of all the scales and standards of any authority which could be got together. The Act, moreover (of 1855), which constituted that one our legal yard, and named the others in a certain order as its successors, in the event of its destruction or loss, omitted the clause identifying its length with any numerical multiple of the pendulum. In fact, then, our yard is a purely individual material object, multiplied and perpetuated by careful copying, and from which all reference to a natural origin is studiously excluded, as much as if it had dropped from the clouds." The supposed advantage, therefore, in adopting the English yard, from the possibility of recovery in case of the loss of the standard by scientific process, is illusory; and men of science are, we believe, now generally agreed that the pendulum cannot form the basis of a really scientific standard. If the pendulum varied only with the latitude and height of the station above the sea level, it would be easy to find a law by which we might ascertain the length of a normal or ideal pendulum, swinging seconds at the pole; but this is rendered impossible "by reason of the local deviations of the intensity of gravity due to the nature of the soil, and the configuration of the ground immediately beneath and round the places of observation;" and the length can only be obtained *approximately* by a complicated astronomical calculation, having the length of the earth's diameter (pre-supposing the knowledge of the length of the metre) as one of its elements. The pendulum is, therefore, in Sir J. Herschel's opinion, "unfit to be received as the ultimate scientific basis of a universal standard;" and this applies both to the approximation suggested by the Governor of Bombay, and to any independent attempt to regulate Indian measures of length by the pendulum.

Herschel, p. 13.

15. The next document of importance in the order of time, bearing upon our subject, is the Report of a Committee on Weights and Measures in the Madras Presidency. The recommendations of this Committee are based upon purely local considerations (indeed much breadth of view could hardly have been expected on this subject in 1839). It is sufficient to observe that they deal only with measures of capacity and with weights; that they ignore the tolah or Indian Government system (which cannot be made to fit into their scheme); that the two scales have no sort of connection with one another; and that the nomenclature and relations of their terms are strictly local. In 1841 the scale of weights was again corrected to introduce the tolah, which was done by making the pollam

* The English Act of 1824 declared that the standard yard consists of 36 inches of such length that 39·13929 of them are equal to the length of a pendulum vibrating seconds *in vacuo* and at the sea-level in the latitude of London. It may be observed that this definition is not precise, as a rigorous definition requires not merely the latitude, but the latitude and longitude of London, *i.e.*, London itself.

† The yard, the pendulum, and the metre, p. 11.

pollam or lowest term equal to 3 tolabs or 1 oz. 2·5 dwt. Even after this modification, it is clear that we, as a committee sitting in Bengal, are not called upon to criticise a system whose sole advantage is admitted to be that it differs very little from the system which was found in actual use at Madras. We must advocate either a Bengal or an Imperial system, and the Madras system has no claim for consideration out of that presidency. We may note, in passing, that the Madras Chamber of Commerce, even at that early period, expressed an opinion that a uniform scale, passed upon the decimal principle, would be the simplest, as well as the most useful, which could be adopted,—though the committee, while recording their dissent from this opinion as a practical solution of the question, do not appear to have thought it worth a serious refutation.

16. The Madras scheme having been modified, at the request of the Government of India, to introduce the tolah as a standard of weight, in accordance with the Bengal Regulation VII. of 1833, this appears to be a suitable place for remarking on the advantages and disadvantages of a system of weights founded on the tolah. The obvious advantages are the connection on the one side with English troy, and on the other side with the coinage, with which its connection is so direct, that the rupee, the eight-anna piece, the four-anna piece, can all be used as actual practical weights. The objections are—1st, that the connection with English weights is with troy not avoirdupois, *i. e.*, with the less used and the less useful of the two English systems; so that if the maund weighs 100 lbs. troy, it weighs 82·2857142857 lbs. avoirdupois, and, therefore, this connection is of little or no practical value; 2ndly, that there is no connection between this system and any system of measure,—and although it is easy to base a system of weight on one of measure, it would be next to impossible to work backwards and base cubical measure on weight, superficial measure on cubical, and linear measure on superficial; 3rdly, that the system has not proved of any practical advantage, as is shown by the facts which we have already brought forward regarding the diversity of weights obtaining. The seer of 80 rupees is of little use for petty shopkeepers, who seldom have that sum by them, and it has never been able to hold its own against the diversities of local sers sanctioned by immemorial usage in every village and bazar. Lastly, if the tolah is the universal unit of weight, and if the rupee be ever altered in value so as to become the 10th part of an English pound sterling, the whole system of weights would require modification; this is pointed out by Sir William Denison, in a Minute accompanying the letter of the Government of Fort St. George to Government of India, No. 834, dated 13th May 1863. We have no doubt that we shall be able to show, in the concluding portion of this report, that the advantages which the decimal system possesses are such as far to outweigh the advantages of a system in which the tolah is the unit of weight, and that the one advantage which it undeniably possesses in its connection with the coinage could be equally secured under the decimal system by a slight alteration in alloy so as to affect the weight without affecting the value of the rupee.

"As regards the 140,000 square miles contained in the Madras Presidency, not a single bazar man has altered his weights one grain, in consequence of the Calcutta Notification." Bayley, para. 20.

17. One other proposition remains to be considered, that of Mr. W. H. Bayley, of the Madras Civil Service, in a pamphlet entitled—"Suggestions for a uniform System of Weights and Measures throughout India." His scheme may be thus described in as few words as possible:—

(I.) There is no existing absolute unit of long measure in India; therefore adopt the English yard and foot, perhaps with decimal subdivisions.

(II.) For the same reason the English acre should be adopted with decimal subdivisions, as in the records of the British Ordnance Survey.

(III.) The best ser weight is one of $77\frac{1}{2}$ tolabs, which is five grains short of 2 lbs. avoirdupois, which would give the advantage of a coinage equivalent, as well as that of a connection, with the English table of weight; the subdivision should be into sixteenths.

(IV.) The best ser measure is one exactly equivalent to an imperial quart, which would contain 80 tolabs of mixed grain, when struck (and heaped measure should not be permitted); and 97 tolabs of water at 84° Fahrenheit. The diameter should be to the depth as three to four; a sotee of 100 seers might be used, and an athee of the eighth of a seer.

18. This proposition is undoubtedly the most carefully considered that has been made, and it has several points of excellence; but the changes advocated

are, in our opinion, too great and too cumbrous to be adopted, except for exceedingly good reasons. It is a fallacy, as we have observed, to seek for a close approximate with English weights and measures, at a time when English weights and measures are on the brink of a tremendous change. When the rest of the world has adopted, or is about to adopt, the metre as its unit of length, it would be a retrograde step to adopt the English foot. Mr. Bayley himself admits that he would advocate a decimal system for England, and his opinion is shared in by almost every man of eminence, and by a large number of practical men; the days of the foot, acre, and pound are in all probability numbered. But this is a subject to which we shall revert. Again, Mr. Bayley's measure of capacity is based on his weight in an abstruse and cumbrous way, for his seer measure would contain neither a seer of water nor a seer of grain. In a natural system the measure of capacity would clearly be based on the linear measure. Lastly, his weight is neither true to the pound, nor to the tolah, nor to practical usage, though it ingeniously combines an approximation to all three.

19. The result to which our inquiries into propositions actually made for the establishment of uniform standards of weights and measures have led us may be summed up as follows:—

All these propositions involve a considerable change in the value and relations of the terms of weight and measure in use.

None of them in any degree simplify calculation.

The only foreign system to which any of them tend to approximate the Indian weights and measures is the English one, which is in an unsettled state, and will probably be superseded by the metrical.

They do not possess any scientific advantage, as referring to an ascertainable standard; nor do they possess the practical advantage of a clear and intelligible connection between weight and the various measures.

And we believe that the same disadvantages would accompany any system except the one we are about to propose.

20. It is then our deliberate conviction that the simplest, the most efficacious, and the most convenient course which can be adopted will be to legalise the French decimal system of weights and measures called the metric system, to put forth the whole strength of Government in every practicable direction in order to familiarise the public with that system; and finally, after a convenient period, to render the use of it compulsory by penal enactments.

21. The committee fully feel the importance and seriousness of the change they advocate. To abolish the use of weights and measures which have been customary in the country from the dawn of its civilisation—an era previous to authentic history; and that over so immense a tract of country, occupied by so many different races engaged in the greatest variety of occupations—to introduce a new and unknown nomenclature, alike into the most complicated mercantile transactions and into the simple details of domestic life,—to press change upon a people less addicted to change and more immutable in their customs and habits than any people that exists; this is not a task to be taken up lightly, nor should the proposition be made without a full conviction that the advantages to be attained by it may considerably exceed the temporary, though perhaps inevitable, evils of change. We therefore feel that we require no excuse for stating at length the grounds of our conviction.

22. The basis of the metric system is the metre, the unit of length. This was supposed to be one ten-millionth part of the quadrant of the meridian between the pole and the equator, according to a measurement made by MM. Mechain and Delambre in the last decade of the eighteenth century. A slight error has been discovered in their measurement of the meridian; and the true length has not to this day been ascertained with precision. Indeed, recent scientific observations have demonstrated the fact that there exist irregularities in the earth's form which were not previously suspected, and that the equator is not an exact circle, from which it will follow that the length of the meridian varies in different longitudes. On these grounds an objection has been made to the use of the metre; but it appears evident that there is no reason, in the nature of things

things, why the unit of measurement should bear a fixed proportion to the size of the earth or to any other cosmical property. It is enough if the unit be distinctly fixed and easily recoverable; two qualities which the metre without doubt possesses.

23. The system may be simply described thus—taking the metre as unit, the measures of length are the decametre (10 metres), hectometre (100 metres), kilometre (1,000 metres), myriametre (10,000 metres) upwards; in all which it will be observed that the prefix is derived from the Greek. Downwards we get the decimetre (1-10th of a metre), centimetre (1-100th), and millimetre (1-1000th), with prefixes derived from the Latin. For superficial measure the squares of the metre, &c., are used, and the square of a decametre forms a unit, which is called the *are*, and which contains 100 square metres. One hundred square ares form the hectare. The cube of the decimetre or 1-10th of a metre gives the litre, or unit of cubical measure; the multiples and sub-multiples of which are framed on the same principle. The cube of the centimetre or hundredth part of a metre of distilled water at its maximum of density, that is, at a temperature of 4° of the centigrade thermometer, equivalent to 39·2° Fahrenheit, forms the gramme or unit of weight; the multiples of which are the dekagramme, hectogramme, and kilogramme, and the subdivisions are the decigramme, centigramme, and milligramme. Finally, the French coinage is regulated by the decimal system, and its unit, the silver franc, weighs five grammes.

24. Now it is obvious, in the first instance, that the system is extremely easy to learn, and could be mastered by a school-boy in a few lessons; and in the second instance that it simplifies calculation to a wonderful degree. Take an amount such as three maunds five seers and eight chittacks; to express such an amount in terms of maunds, seers, and chittacks respectively would require three separate and complicated sums. If the amount consisted of three kilogrammes, five hectogrammes, six decagrammes, and seven grammes, it might be expressed in terms of either quantity by a mere shifting of the decimal point, thus—

$$\begin{aligned} & 3\cdot567 \text{ kilogrammes.} \\ = & 35\cdot67 \text{ hectogrammes.} \\ = & 356\cdot7 \text{ decagrammes.} \\ = & 3567 \text{ grammes.} \end{aligned}$$

And in the more complicated operations of trade the value of a simple notation becomes still more evident. To find the price of 36 yards 3 feet 9 inches, at one and three pence half-penny a yard, requires time even to the most expert; and expertness implies both time and trouble in education. To find the price of three dekametres, five metres, nine decimetres, at 11 francs 72 cents a metre, requires merely simple multiplication and the management of the decimal point, thus—

$$\begin{array}{r} 35\cdot9 \\ 11\cdot72 \\ \hline \cdot718 \\ 25\cdot13 \\ 35\cdot9 \\ 359 \\ \hline 420\cdot748 \\ \hline \end{array}$$

i. e., 420 francs, 74 cents, and 4-5ths.

25. On this point, the evidence taken by Mr. Ewart's Committee of 1862, is conclusive; and we quote two paragraphs from the Report, proving—First, the immense educational advantage of the decimal system; and, secondly, the saving of labour in mercantile establishments.

“ Economy of time in education is one of the beneficial results of the metric system; while the study of English weights and measures is laborious and repulsive to both teacher and pupil, anyone can easily master the metric system. ‘Comparing the English system of calculation with the decimal,’ says M. Lor-

sont, 'I think the difficulty of the English system is as great as it would be to make a calculation in the old Roman figures.' The metric system is soon learnt; 'any person,' says Mr. Fellows, 'in a quarter or in half an hour would be able to master the whole metric system.' The time which the use of a decimal system would save in education has been generally stated (on the authority of schoolmasters) to be at least a year. Mr. Mumford, late certificated master of the British School at Highgate, describes the readiness and interest with which children have acquired it. Dr. Ihne, of the University of Bonn, conductor of a large school at Liverpool, finds his pupils, 'especially foreign boys, repelled and annoyed' by the English system of weights and measures, and his teachers also; he states that it appears to require considerably more time to learn, so that a boy is prevented from ever attaining the higher position of knowledge, which he might otherwise reach, by this preliminary barrier of arithmetic. 'The waste of time,' says the Reverend Alfred Barrett (a clergyman extensively engaged in education), 'to junior pupils in learning the tables of weights and measures is immense.' He describes the work of education in the French military academies as 'much higher, and more forward than ours,' and traces the cause to the time of juvenile pupils being lost in their wanderings through the mazes of our arithmetical system. That eminent mathematician, Professor De Morgan, thinks that 'the whole time devoted to arithmetical education might, by adopting the decimal system, be reduced by one-half, or probably more.' 'Its adoption,' says Dr. Farr (Superintendent of the Statistical Department in the General Register Office), 'would get rid of all compound rules of arithmetic; it would make calculations simple and mechanical. Decimal logarithms are calculated and printed by machinery; with the vulgar fractions of our common arithmetic this could not be done.' Your Committee examined, on this part of the subject, more than one working man. There is abundant testimony to the ease with which working men acquire the metric system. Mr. Dickson, already referred to, says, 'In the works I carry on (at Dunkirk), I employ about 1,000 persons. I have had frequently a great many overseers from Scotland; they come not knowing the French language, far less the weights and measures or the money, but they very soon get acquainted with the metric system.' Mr. Richard Wyse has been in the employment of Mr. Brassey as a mechanic 25 years; he has been engaged on railways in France, Belgium, and Savoy. He states that he very soon understood the metric scale, and found it much easier to comprehend than the English scale of yards, feet and inches. 'The English workmen,' he says, 'get the weights very quickly!' He is asked, 'How long do you think it would take them?' His answer is, 'A fortnight, or a month at farthest. All the workmen I ever had anything to do with prefer the French method to the English.'

"A saving of labour is effected by the use of the metric system in mercantile establishments. Mr. Dickson, a witness already cited, says, that 'under the metric system' (which he considers 'one of the greatest blessings ever conferred on France') he can carry on his trade with fewer clerks than he could under the English system. M. Loursont, a merchant and manufacturer in Belgium, France, and England, says that 'if the metric system existed in England, he could conduct his business with a considerably diminished number of clerks, and prevent a great deal of error. An English office is made up of ready reckoners and *vade mecums*, things utterly unknown abroad.' 'Under the metric system,' he adds, 'it is much easier and shorter to make the calculations yourself.' The evidence of Mr. Bass, M. P., tends to the same result."

26. In connection with this subject, we may remark that the introduction of the metric system in this country to Government Offices of Account, the Commissariat, &c., would enormously reduce the amount of calculations, and consequently the cost of establishments.

27. In regard to operations of a more scientific character, we may quote from the Report of a Committee of the British Association in 1864, the following statements:—

"The English workmen engaged in building trades, such as carpenters, masons and bricklayers, Professor Donaldson considers to be generally very intelligent; and whatever would afford to them facility in calculation would be acceptable as soon as it had been explained to them.

"In

"In railway operations, a civil engineer ascertains weight by computation of measure; he cannot take scales and beams, and weigh pieces of iron of 20 tons and upwards; he knows the specific gravity of the iron, and he ascertains by the measurement the weight of a given quantity of that metal. The metric system aids in all calculations relating to specific gravity."

Mr. W. Crossley, C. E., stated to the Committee of the House of Commons on weights and measures, that he believes the decimal system is extending itself very much, especially for scientific purposes; and amongst professional men "it is extending itself among them very considerably, without any law whatever."

Chemists, pursuing important researches, employ generally metric weights and measures. Thus, in the Royal Institution of Great Britain, in Albemarle-street, the operations of the laboratory are carried on with the aid of the metric system; and Dr. Frankland, one of the chemists of that society, finds the metric weights and measures particularly valuable in his experimental investigations respecting gases. The gramme, with its multiples and minute subdivisions, is a popular weight with chemists.

In the practical business of a druggist the metric system of weights and measures, if generally adopted, would, in the opinion of Mr. Squire, save a great deal of labour to the rising generation. In the metric system, Mr. Squire observes, as the divisions and multiplications are all by ten, the subject and the calculations would be much simplified.*

A meeting, held in June 1863, of the Pharmaceutical Society of Great Britain, adopted a petition to the House of Commons, in which they recommend an assimilation of the weights and measures of all nations as likely "to tend greatly to the convenience of pharmacutists† and the safety of the public."

The Pharmaceutical Society of Great Britain felt assured that a "very few years would familiarise both prescribers and dispensers with the new weights and measures, and that the easy multiplications or division of them by the decimal system, universally applied, would afford such facilities of computation as to recommend it strongly to the adoption of medical men and chemists; and they are strengthened in this opinion by the invariable practice of English and all other analytical chemists already to state the results of investigations in decimals."

28. Such being the advantages offered by the metrical system, it is not surprising that many nations have already availed themselves of that system. It was made compulsory in France in 1840; and has since been adopted by Italy, Spain, Portugal, Belgium, and Holland. It has been partially adopted in Austria and Switzerland; and the Zollverein have declared their assent to the principle. The Imperial Academy of Sciences in St. Petersburg have recommended its adoption in Russia, which is only waiting for England to take the lead. In 1862, 40 per cent. of the total tonnage of Great Britain was carried to or from countries using the kilogramme. Turning to America, Mexico, Chili, Peru, New Granada, Bolivia, Venezuela, and French and Dutch Guiana have adopted the metrical system, and the United States have (according to accounts which have reached us since the commencement of this Report) permitted its introduction into any State desiring it.

29. It thus appears that, for purposes of international trade, the use of the metric system in India would be desirable on many grounds, even if it were not likely to be adopted in England. The probability of such adoption increases its desirability by an immense ratio. That probability may, we think, be fairly assumed from the two reports already quoted. In 1862 a Committee of the House of Commons, under the presidency of Mr. Ewart, and containing Messrs. Hume, Cobden, Adderley, and others, most strongly recommended the introduction of the metric system. In 1861 the Associated Chambers of Commerce of the United Kingdom, resolved unanimously, that "it is highly desirable to adopt the metric system, which has been introduced into many European countries with great advantage to the saving of time in trading and other accounts." In 1864 the Committee of the British Association, from a scientific point of view, recommended its adoption. In that year it was legalised by 27 & 28 of Vict.

c. 117.

* Pharmaceutical Journal, July 1863, p. 8.

† Ibid, p. 9.

c. 117. But it had previously been adopted in many scientific professions, and by many machine-makers, &c., by the Registrar General, and in the Statistical Department of the Board of Trade.

30. The advantages, then, of the metrical system may be thus summed up :— It is a complete, clear, and simple system, connecting weight with measure, and money with weight, by simple and intelligible relations. It is easy to learn, and it simplifies the labour of calculation (especially when combined with a decimal coinage) to an extraordinary degree. It has been adopted by nearly half of the civilized world, and will probably be soon adopted, at all events in commercial and international transactions, by England; and its adoption here would do more than anything could do to bring India into relation with the higher civilization of Europe. To anticipate the arguments which will probably be urged on the other side (for as yet the question has never been put before the public), it may be said that a decimal system is not suited to the people of India, who prefer counting by fours and sixteens; that the change is too vast and sudden; that the people will never give up their old weights and measures; that the names of the various measures and weights are not suitable to India; that the adoption of the system would involve an immense expenditure in standard measures and weights and in verification offices; and that the change to a decimal coinage, which is admitted to be necessary in order to secure completely the advantages of the system, is impracticable in this country. These are all the objections with which we are required to deal, for the argument that the metrical system is not based upon a sound and ascertained scientific basis is not likely to be brought in this country, and has been already disposed of; and the argument that an English Government ought not to support a French system may be left to itself.

31. It is quite true that the native of this country has a tendency to group things into four, or to divide things by four, and there is something captivating and symmetrical in the arrangement. Sixteen is better divided than 10; but there is this great objection to the quaternary system, that it has no suitable notation. The decimal notation, which was, it is believed, invented in this country, is always used for expressing mere numbers; so that, in the most universal idea of all, the idea of abstract quantity, the people are familiarised with that notation. If a native has occasion to write Rs. 3,425. 8. 3., he uses the decimal notation to express the number of rupees, though not to express the fractions of a rupee. Again, if the division into fourths and sixteenths was universal, something might be said for retaining it; but all that can be shown is that there is a tendency to use it in fractionizing certain units, such as the seer and rupee, though the division by four is often missing or mixed up in the same series with other divisions.

32. It may be said that, even if the decimal system were adopted, the bases should be such as to correspond with recognised Indian standards. Considering the uncertain and changeable character of the best known measures and weights, that their differences are to be counted up by hundreds, that the hâth fluctuates in one district from 18 to 33 inches, the gaj in another district from 19 to 82 inches, that a bigah means in one place 400 square feet, and a 100 miles' away 14,000 square feet, that the ser may weigh 10 ounces or four pounds,—considering, in short, that there are no universal fixed standards in India, and that, if we fix the measure of one district as the standard for all, the prejudices of the other 99 districts would be as much shocked as if we chose an entirely new standard, we have come to the conclusion that it would be most advantageous to use the experience of other countries, and adopt the standards which are ready made to our hands. Moreover, one strong argument for the decimal system is the facility offered to international trade, which, it is obvious, requires not merely a decimal system, but the system which prevails elsewhere.

33. The greatness of the change, coupled with the incapacity for change of the people of India, is an argument against change at all; for nothing but a sweeping reform would meet the evil. It is clear that anything is better than the confusion and uncertainty which now prevail, and the change we propose has the advantage of being a final one. We deprecate hurry; we would put the system before the people in many ways; we would recommend its adoption in government

government offices, and by the railways; or wherever, in fact, the orders or influence of government could avail; we would teach it in schools, and let a generation of young men grow up thoroughly versed in the system; we would make the verification of weights and measures as simple, as public, and as inexpensive as possible; and at the end of 18 or 20, or even 25 years, we would prohibit the use of all other weights and measures. That the change is a vast one, and that the people dislike change, is a reason why it should be made with circumspection, not a reason why it should not be made.

34. As to the names of weights and measures, it is not clear to the committee that the French names are in any way objectionable otherwise than as new. With a slight change in the termination of some, they would run well in Bengali as গ্রাম, কিলোগ্রাম, আৰ, হেক্টাৰ, মেণ্ডা, ডাণিমেন্ডা, লিভা, ডেকালিভা, or in Urdu as گرام کلگرام آر هیکٹار میٹر ڈسیمیٹر لیره ڈیکالیره and the significance of the prefixes would be appreciated at all events by the better educated class of the population. But in order to familiarise the public more rapidly with the new weights and measures, it might be advisable to allow the alternative use of some of the old names for the weights and measures to which they approach nearest. Thus the metre might be called the *gaj*; the demi-metre, or five decimetres, the *hâth*; and in weights again, the kilogramme might be called *ser*; the hectogramme, *chittack*; and the dekagramme, *tolah*. The gramme might be called *dahim*, a word pretty generally understood to mean a tenth.

35. Lastly, we may observe that a decimal system of weights and measures does not necessarily imply a decimal coinage, although the latter is indispensable for procuring the *maximum* of advantage from the former. As this matter must be determined separately, and from a professional point of view, we can merely suggest how, in our opinion, the change may be carried out. We have then two propositions to make, which may be taken either together or separately:—1st. Alteration of the weight of the rupee. The rupee weighs 11·3508 grammes; by an addition of 1·1492 grammes, or about ·0908 of its weight (in alloy so as not to increase its actual value*), it would weigh 12·25 grammes, or exactly the 80th part of the kilogramme or new seer, which would give ample connection with the currency and enable rupees to be used, as they are now occasionally used, for weights. 2nd. Decimalization. All we want is a gold coin representing 10 rupees, and a cent or pie (copper) representing $\frac{1}{100}$ of a rupee; the four-anna piece of 25 cents, and the eight-anna piece of 50 cents should be kept in circulation; while the two-anna piece of 12½ cents might be thrown out or replaced by a silver “dahim” of 10 cents. It is to be remembered that, by increasing the alloy, the size of the silver pieces would be increased by one-tenth and one-fifth, so that such a dahim would be very little smaller than the actual two-anna piece.

36. We close our report with a series of practical propositions, the adoption of which will, we are convinced, tend to bring about the uniformity which has been so long desired, and to facilitate every branch of trade and commerce, both internal and foreign.

1st. A

* With regard to the proposition to alter the alloy, we quote as follows from M. Herve's *Manual des Alliages*. Encycl. Roret:—“Ces deux métaux s'allient avec beaucoup de facilité et en toutes proportions. Ce composé est plus dur, plus élastique, plus sonore et presque aussi tenace que l'argent; il conserve la couleur blanche, selon quelques chimistes, lors même que le cuivre y entre pour plus de moitié suivant M. Berzélius, parties égales de cuivre et d'argent donnent déjà un alliage jaune, semblable au lait. Toujours est il que l'addition d'une trop grande quantité de cuivre rend l'argent rougeâtre; mais le couleur de ces alliages n'est jamais aussi belle que celle de l'argent pur, lors même qu'ils n'en contiennent que quelques centièmes de cuivre. Mais l'alliage reste ductile, quelle que soit la quantité réciproque des deux métaux, seulement il l'est plus ou moins, selon les proportions de ceux-ci.

La dureté de cet alliage est au maximum, d'après M. Thomson lorsque la proportion du cuivre s'élève à 1·5.

Pour la fabrication de la monnaie. M. Hatchett considère un alliage de parties égales d'argent et de cuivre comme celui qui convient le mieux, et le cuivre seul comme préférable à l'argent seul.”

How variable the alloys used for coinage are, may be seen from the following Table:—

Copper per cent.				Copper per cent.			
England	-	-	7·5	Portugal	-	-	11
Holland	-	-	8	Denmark	-	-	12
France	-	-	9	Switzerland	-	-	21
Austria	-	-	9·5	Russia	-	-	24
Sardinia	-	-	9·5	Hamburgh	-	-	50
Spain	-	-	10·5 to 15·5				

1st. A short law should at once be passed, similar to the English Act, which will be found in our Appendix, legalising the use of the metric system in all kinds of transactions.

2ndly. Application should at once be made to the Bureau du Ministère de l'Intérieur at Paris, through the authorised channels, for a complete set of carefully verified weights and measures.

3rdly. A permanent committee should be appointed, with a paid secretary, to carry out the measures determined upon, to draw up tables, keep and verify standards, superintend inspectors, and take measures for increasing the use and improving the knowledge of the system among the people. The committee should include at least one member nominated by the Chamber of Commerce, one nominated by the British Indian Association, one of the management of the East Indian Railway, the Surveyor General, the Mint Master, one officer representing the Financial Department, and one representing the Educational Department, with others; and, for the first season at all events, should include a member nominated by each of the Presidencies of Bombay and Madras (who might be the representatives of those Presidencies in the Legislative Council). It should be under the orders of the Government of India, in the Home Department, to which all Reports should be made.

4thly. Government should, as early as possible, introduce the system into the Public Works Department, the Customs, the Commissariat, the Account Departments, the Survey and all other departments; and the railways should be earnestly requested to pursue the same plan.

5thly. Offices of verification should be established in every district and large town, and supplied with standard weights and measures bearing the stamp of the permanent committee.

6thly. Tables should be prepared and widely circulated, showing the metric expressions for the ser of 80 tolahs and its multiples and subdivisions, and so for bigahs, &c.

7thly. The metrical system should be taught in all Government and aided schools,* and a knowledge of it should be required at the entrance examinations in the universities, and from all candidates for public employment.

*We have a collection of French Educational Works on the subject.

We have, &c.

(signed) J. E. Gastrell, President.

(a)

J. Geoghegan.

H. F. Blanford.

Digumber Mittfr.

W. L. Heeley, Secretary.

APPENDIX.

CAP. CXVII.

An Act to render Permissive the use of the Metric System of Weights and Measures.

WHEREAS, for the promotion and extension of our internal as well as our foreign trade and for the advancement of science, it is expedient to legalise the use of the metric system of weights and measures: Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. This Act may be cited as the "Metric Weights and Measures Act, 1864."

2. Notwithstanding anything contained in any Act of Parliament to the contrary, no contract or dealing shall be deemed to be invalid or open to objection on the ground that the weights or measures expressed or referred to in such contract or dealing are weights or measures of the metric system, or on the ground that decimal subdivisions of legal weights and measures, whether metric or otherwise, are used in such contract or dealing.

3. The

(a) Mr. Sandeman has expressed his concurrence in this Report, but is unable to sign it owing to absence from India.

Short Title.

Contracts may be made in terms of the metric system.

3. The Table in the Schedule hereto annexed shall be deemed to set forth, in terms of the weights and measures in force in this country, the equivalents of the weights and measures therein expressed in terms of the metric system, and such Table may be lawfully used for computing, determining, and expressing in weights and measures of the metric system.

Equivalents of metric weights and measures in terms of weights and measures.

SCHEDULE to which this Act refers.

SCHEDULE of TABLES of the Values of the Principal Denominations of Measures and Weights on the Metric System expressed by means of the Legalized Denominations of Measures and Weights in Great Britain and Ireland.

MEASURES OF LENGTH.

Metric Denominations and Values.		Equivalents in British Denominations.				
	Metres.	Miles.	Yards.	Feet.	Inches.	Decimals.
Myriametre - - - -	10,000	{	6	376	-	11·9
			or -	10,936	-	11·9
Kilometre - - - -	1,000	-	1,093	1		10·79
Hectometre - - - -	100	-	109	1		1·079
Dekametre - - - -	10	-	10	2		9·7079
Metre - - - -	1	-	1	-		3·3708
Decimetre - - - -	$\frac{1}{10}$	-	-	-		3·9371
Centimetre - - - -	$\frac{1}{100}$	-	-	-		0·3937
Millimetre - - - -	$\frac{1}{1000}$	-	-	-		0·0394

MEASURE OF SURFACE.

Metric Denominations and Values.		Equivalents in British Denominations.		
	Square Metres.	Acres.	Sq. Yards.	Decimals.
Hectare, <i>i. e.</i> , 100 ares - -	10,000	{	2	2280·3326
			or -	11900·3326
Dekare „ 10 ares - -	1,000	-		1196·0333
Are - - - -	100	-		119·6033
Centiare, <i>i. e.</i> , $\frac{1}{100}$ are - -	1	-		1·1960

MEASURES OF CAPACITY.

Metric Denominations and Values.		Equivalents in British Denominations.						
	Cubic Metres.	Qtrs.	Bhls.	Pecks.	Gals.	Quarts.	Pts.	Decls.
Kilolitre, <i>i. e.</i> , 1,000 litres -	1	3	3	2	-	-		0·77
Hectolitre „ 100 litres -	$\frac{1}{10}$	-	2	3	-	-		0·077
Dekalitre „ 10 litres -	$\frac{1}{100}$	-	-	1	-	-		1·6077
Litre - - - -	$\frac{1}{1000}$	-	-	-	-	-		1·76077
Decilitre, <i>i. e.</i> , $\frac{1}{10}$ litre -	$\frac{1}{10000}$	-	-	-	-	-		0·176077
Centilitre „ $\frac{1}{100}$ litre -	$\frac{1}{100000}$	-	-	-	-	-		0·0176077

WEIGHTS.

Metric Denominations and Values.						Equivalents in British Denominations.					
					Grams.	Cwt.	Stones.	Pounds.	Ozs.	Drams.	Decimals.
Millier	-	-	-	-	1,000,000	19	5	6	9		15.034
Quintal	-	-	-	-	100,000	1	7	10	7		6.304
Myriagram	-	-	-	-	10,000	-	1	8	-		11.8304
Kilogram	-	-	-	-	1,000	{ - - 2 3 (or 15432.3487 grains.)					4.3880
Hectogram	-	-	-	-	100	-	-	-	3		8.4383
Dekagram	-	-	-	-	10	-	-	-	-		5.6438
Gram	-	-	-	-	1	-	-	-	-		0.56438
Decigram	-	-	-	-	$\frac{1}{10}$	-	-	-	-		0.056438
Centigram	-	-	-	-	$\frac{1}{100}$	-	-	-	-		0.0056438
Milligram	-	-	-	-	$\frac{1}{1000}$	-	-	-	-		0.00056438

— No. 4. —

HOME DEPARTMENT.—Public.—No. 126 of 1867.

To the Right Honourable Sir *Stafford H. Northcote*, Bart.,
Secretary of State for India.

Sir,

Simla, 11 July 1867.

REFERRING to the Despatches noted on the margin, on the subject of reform-
ing the system of weights and measures in India, we

From Secretary of State, No. 29, dated 9th March 1864.
To " " " 46, " 29th July 1864.
From " " " 1, " 7th January 1865.

transmit herewith for your information a copy of our
Resolution No. 1728, dated the 25th ultimo, together
with copies of the reports of the local governments and administrations, and other
papers cited at the commencement thereof.

2. For the consideration of the various proposals made in the reports of the local governments and administrations, and the preparation of a well-digested scheme of weights and measures which shall be applicable to all India, together with a draft Bill on the subject, we have appointed a central committee, which will meet in Calcuttā on the 15th November 1867. This committee, of which Colonel R. Strachey, R.E., will be president, has, you will observe, been so constituted as to represent the interests and opinions of the official, mercantile, and native communities of the three Presidencies. The committee will report within three months from the date of assembling, and on receipt of its report, the instructions communicated in the second paragraph of Sir Charles Wood's Despatch of the 7th January 1865, No. 1, will be duly carried out.

We have, &c.
(signed) *John Lawrence.*
W. Mansfield.
H. S. Maine.
G. N. Taylor.
W. N. Massey.
H. M. Durand.
G. U. Yule.

— No. 5. —

(No. 1728.)

EXTRACT from the PROCEEDINGS of the Government of India in the Home Department, under date Simla, 25th June 1867.

READ again the Resolution of the Home Department, Nos. 3835-3840, dated 20th June 1864, and the papers referred to therein, on the subject of reforming the system of weights and measures in India.

Read also the following correspondence with the Secretary of State :—

To the Secretary of State, No. 46, dated 29th July 1864.
From „ „ 1, dated 7th January 1865.

Read the following reports having reference to the Resolution of 20th June 1864 :—

From the Government of Madras, No. 2334, dated 27th September 1865, 1 enclosure.
„ „ Bombay „ 2008, dated 4th November 1865.
„ „ „ „ 609, dated 24th March 1866.
„ „ Bengal „ 1673 T., dated 23rd August 1866.
„ „ „ „ 87, dated 4th January 1867.
„ „ North Western Provinces, No. 3380A., dated 27th Oct. 1864.
„ „ Punjab, No. 2310, dated 20th November 1866.
From the Chief Commissioner, Oudh, No. 3080, dated 3rd September 1866.
From the Chief Commissioner, Central Provinces, No. 358-4278, dated 27th Nov. 1865.
From the Chief Commissioner, British Burmah, No. 294-2003, dated 13th Sept. 1866.
From the Commissioner, Mysore, No. 4420-50, dated 28th December 1865.
From the Resident, Hyderabad, No. 29, dated 18th July 1866, 1 enclosure.

Read also the following papers :—

From the Financial Department, No. 1874, dated 9th August 1866, containing addresses delivered by Earl Fortescue, President of the International Decimal Association, and Sir John Bowring, Chairman of the Metric Committee of the British Association, on the subject of metric weights and measures.

Memorandum by the Honourable Mr. Shaw Stewart, dated 7th February 1867, submitting a draft Bill.

REMARKS.

ON the 13th May 1863, the Government of Madras drew attention to the importance of steps being taken for a reform of the various systems of weights and measures in use in British India, and suggested the appointment of a committee, consisting of properly qualified persons, one from each Presidency, to consider and report on the system which, in their opinion, it would be desirable to adopt for all India. “The Government,” it was suggested, “would instruct the committee to limit their inquiries and suggestions to the substitution for the present numerous and contradictory scales of weights and measures, of such a simple form as would, while it reduced the alteration in the existing scales to a minimum, and disturbed the present nomenclature as little as possible, make the Indian system universal throughout British India, and place it in a simple relation with that now existing in England. Without a restriction of this nature,” it was added, “the committee might enter on the very broad question of the theoretically best system, and the result might be the suggestion of a scheme which, however perfect in theory, would be attended with such disturbance of existing relations as to render its adoption impracticable. On the other hand, the Government would not confine the committee to any particular standard or unit of weight.”

2. The Calcutta Trades Association also, on the 10th July 1863, addressed the Government of India on the same subject, and proposed that a mixed com-

mission should be appointed to inquire into the existing system of weights and measures, and to adjust the same to one Imperial standard, and that the revised system should be enforced by legislation.

3. The question of revising the Indian metrical system had engaged the attention of the Government of India at various periods since the year 1837, but the information available had always been found insufficient for a decision as to the scale which it was most expedient to adopt.

4. Accordingly, when the proposals of the Madras Government and the Calcutta Trades Association were laid before the Governor General in Council, his Excellency observed that a uniform system of weights and measures for all India would doubtless be of great advantage, but that the difficulties in the way of attaining so useful an object were grave and numerous. There was much to be done before a practicable scheme for general adoption could be discovered, and it was anticipated that, when discovered, it would be better introduced by indirect means than by penal legislation.

5. The mode of dealing with the subject which most recommended itself to His Excellency in Council, was to constitute a separate committee of well-selected persons for each presidency and province, each committee to consist of three or five members (for preference three, viz., a civil servant, a merchant, and an engineer officer), who should meet together in the chief city of such presidency or province, and deliberate on the subject, reporting the result of their labours to the local government or administration, for submission to the Government of India, with any further remarks which the local authorities might deem necessary.

6. For a central committee for all India, as proposed by the Madras Government, there was not at that time sufficient information available, and His Excellency in Council therefore believed that, as a preliminary measure at any rate, local committees would be more useful, besides being far less expensive.

7. In accordance with these views, a resolution was passed on the 20th June 1864, and was communicated to the local governments for information and guidance, together with a selection in a pamphlet form of all the more important portions of the correspondence on this subject which had, from time to time, been addressed to the Government of India.

8. The Secretary of State, on the 7th January 1865, approved of the decision of the Government of India, and observed as follows:—

“It is obvious that great care and circumspection will be required in dealing with a question so closely connected with the interests and habits of the people; and I have to request that I may be placed in full possession of the proposals of your government, together with the reports of the committees and the recommendations of the local governments, before any measures involving authoritative interference with the existing systems of weights and measures are brought into operation.”

9. The replies of the local governments and administrations, reporting the steps taken by them to carry out the views expressed by the Government of India in the resolution of the 20th June 1864, have now been all received, and the Governor General in Council has given his attentive consideration to the several proposals made therein.

10. These differ greatly in the modes which they propose to adopt, and His Excellency considers that the best method of arriving at any definite result will be to submit the entire question to the decision of a well-selected central committee to meet at Calcutta.

Resolution.—The Governor General in Council is accordingly pleased to resolve that a committee be assembled at Calcutta on the 15th November 1867, constituted as follows:—

President:—COLONEL STRACHEY, R.E.

Members:

The Master of the Calcutta Mint for the time being.

The Comptroller General of Accounts, Mr. E. F. Harrison.

Two members to be nominated by the Chamber of Commerce at Calcutta.

A member of the Bengal Civil Service (Mr. R. B. Chapman).

A member of the Bombay Civil Service (the Honourable Mr. J. Shaw Stewart).

A member of the Madras Civil Service (to be nominated by the Madras Government).

Three native members to be appointed by the Government of Bengal.

2. Any gentlemen, natives of Bombay and Madras, who being in Calcutta may be recommended by their respective Governments and may be willing to serve on the committee.

3. The committee will have power to add to its members any gentlemen present in Calcutta, whose assistance they may desire to obtain, and who may be available for the duty and willing to undertake it.

4. The committee will submit its report within three months from the date of assembling. A selection of the correspondence which has passed will be sent to each member when nominated.

5. It will be sufficient instruction to the committee to accept generally the views of the Government of Madras expressed in their letter of the 13th May 1863, and already quoted above. Although the Governor General in Council does not wish entirely to preclude the committee from examining what may be theoretically the best system of weights and measures, His Excellency desires that they may be guided in their selection of any system rather by considerations of its practical convenience for adoption in India generally, and its capability of being placed in easy relation with that now existing in England. Nor does the Governor General in Council consider it expedient that the committee should narrow their inquiries by the arbitrary adoption of any particular standard unit from any existing system of measurement or weight.

6. The entire correspondence which has passed on this subject, and the reports of the local committees, will be laid before the general committee, and the Governor General in Council trusts that these materials will enable them to construct such a system of weights and measures as will give general satisfaction, and to submit a bill for giving effect to their recommendation which the legislature may be able to adopt without objection.

Copy forwarded to the Government of Bombay.

Copies forwarded also to the Governments of Madras and Bengal, with the request that the services of a qualified civil servant may be nominated from the former Presidency, and that the Lieutenant-Governor of Bengal will be good enough to lend the services of Mr. R. B. Chapman, and to nominate three selected native members to sit on the committee, including, if available in Calcutta, a member of the up-country mercantile body and of the Parsee community.

Copy forwarded also to the Secretary to the Chamber of Commerce, with a request that the Chamber will be good enough to nominate two gentlemen of experience willing to sit on the committee.

Copy forwarded also to the Department of Public Works and Financial Department, with the request that the services of Colonel Strachey, of Mr. E. F. Harrison, and of the Mint Master of Calcutta, may be made available for the duty in question.

Copy of the resolution, with a selection of the correspondence referred to, forwarded to the President of the Committee and to each of the members already appointed; copies to be forwarded hereafter to the other members as they are appointed.

— No. 6. —

M A D R A S.

From *W. Hudleston, Esq.*, Acting Secretary to the Government of Fort St. George, to *E. C. Bayley, Esq.*, Secretary to the Government of India.— (No. 2334); dated 27th September 1865.

REFERRING to the extract proceedings of the Right Honourable the Governor General in Council, dated 20th June 1864, No. 3835, on the proposed reform of the weights and measures of the country, I am directed to forward, for his Excellency's consideration, the accompanying Report of the Committee appointed in this Presidency to consider the subject, together with the minutes recorded by the members of this Government on perusal of the report.

2. I am to add that Mr. Tolputt, late Chairman of the Chamber of Commerce, was appointed a member of the Committee, with the Mint Master, Colonel Carpendale, R.E., and Mr. Sim, the Revenue Secretary to Government, but that gentleman quitted India before the report was sent in.

— No. 7. —

REPORT by the Committee for Weights and Measures, to the Secretary to the Government of Fort St. George; dated— April 1865.

WE have the honour to submit our views on the subject of remodelling the weights and measures of this Presidency, which duty was assigned to us in General Order dated 7th September last.

2. After much consideration we have come to the conclusion that the system proposed by Mr. W. H. Bayley in 1857, though it be not scientifically the most perfect, is practically the best in the present circumstances of this Presidency; and, with one modification, we recommend its adoption, as promising the greatest advantages, and causing the least inconvenience to the people.

3. As regards weights, we considered it advisable to ascertain the opinions of several gentlemen as to the expediency of retaining the tola or rupee of 180 grains troy as the unit of weight. The majority of the gentlemen whom we consulted are, as will be seen from their replies herewith submitted, in favour of abandoning the tola of 180 grains as the unit of weight, and of assimilating the weights of India to the avoirdupois weights of England. In these opinions we entirely concur.

4. If the tola of 180 grains be retained, it is impossible to assimilate the weights of India to those of England, which we consider a matter of the first importance. There is, no doubt, a certain degree of convenience and advantage in having weights which correspond with current coins, within such limits as admit of the former being tested by the latter; but for this purpose exact correspondence is not necessary, new coins are not always procurable, nor even with them can exact accuracy be attained. Practically, we believe that the test by coin is rarely restored to, and there are very cogent objections to basing the weights of a country on its currency, when that currency is liable to change, and open to improvement.

5. The English avoirdupois pound, which there is little doubt will be retained for many years to come, whatever changes may be made in its multiples and sub-multiples, contains 7,000 grains troy, and a fortieth part of it would give a
tola

tola of 175 grains, being only five grains less than the present rupee, a difference too small to vitiate the test by coins worn by use, as these average only 178 grains. The only advantages of having weights corresponding with the currency would thus be attained within limits of accuracy sufficient for all practical purposes. Differing on this point from Mr. Bayley, we would make the total unit of weight, as distinguished from the tola of currency, equal to 175 grains; and starting with this, we would adopt Mr. Bayley's proposal of having a seer of 2 lbs. avoirdupois, sub-divided by sixteenths, with a maund of 100 lbs. and a candy of 2,000 lbs. as the higher denominations.

6. The present standard weights of the Madras Government do not recognise the "seer;" but there can be no doubt that, as observed by Mr. Bayley, it is very generally known throughout India, and that its most general equivalent is 80 tolas.

7. The binary scale is one with which the people of this country are most familiar; and as the facility of introducing any new system of weights depends very materially on the degree in which it adapts itself to the convenience, the usage, and education of the people in their ordinary transactions, it is desirable that the seer should be sub-divided on the binary principle. In large mercantile transactions, on the other hand, the decimal system is undoubtedly the most convenient; and as there is some probability of its being adopted in England, it would, we think, be well to make the maund and candy equal to 100 lbs. and 2,000 lbs. respectively, and thus escape the chance of another change being rendered necessary before long.

8. The following Table shows the different weights which we now beg to recommend:—

1 tola	=	175 grains.		
80 tolas	=	1 seer	=	14,000 „ = 2 lbs.
50 seers	=	1 maund	=	700,000 „ = 100 „
20 maunds	=	1 ton	=	2,000 „

The seer would be sub-divided into—

$\frac{1}{2}$ seer	=	7,000 grains	=	1 lb.	=	40 tolas.
$\frac{1}{4}$ „	=	3,500 „	=	$\frac{1}{2}$ „	=	20 „
$\frac{1}{8}$ „	=	1,750 „	=	$\frac{1}{4}$ „	=	10 „
$\frac{1}{16}$ „	=	850 „	=	2 oz.	=	5 „
$\frac{1}{32}$ „	=	425 „	=	1 oz.	=	$2\frac{1}{2}$ „

In like manner the maund would be sub-divided into the—

$\frac{1}{2}$ maund	=	50 lbs.
$\frac{1}{4}$ „	=	25 „ (the present Madras mercantile maund).

If, however, it be considered desirable to follow the avoirdupois system closely, then the maund might be made equal to 56 seers, or 112 lbs., the quarter and half maund being respectively 28 lbs. and 56 lbs., while 20 such maunds would be the present ton of 2,240 lbs. The maund and candy we propose, though not corresponding with the present cwt. and ton of England, are easily convertible into them.

Linear Measure.—We concur with Mr. Bayley that the English yard and foot should be adopted, with, however, the present English sub-divisions. The English linear measures are now largely followed by the people, and are exclusively used in the extensive transactions of the Public Works Department and mercantile firms.

Land Measure.—In the Revenue survey, which is now in rapid progress, and is to be carried out in every district of the Presidency, the English acre, with decimal sub-divisions, is solely used. We recommend, therefore, that the imperial acre, decimally sub-divided, be adopted by Government.

Measures of Capacity.—We consider Mr. Bayley's arguments in favour of a seer exactly equivalent to an imperial quart to be conclusive, and we recommend the adoption of this measure, sub-divided by eighths with a multiple of 100 seers, as proposed by him. Heaped measures should not be recognised, and we would recommend that the dimensions of the measures should be defined by law.

We have not thought it necessary to trouble Government with a lengthened statement of the reasons which have led us to recommend the adoption of Mr. Bayley's scheme, which, we may remark, has met with very general approval, and was pressed on the Government of India six years ago by the Government of Madras.

For the introduction of new weights and measures a legislative enactment is undoubtedly necessary, but the change should be restricted at the outset to the chief towns of the Presidency,—time being allowed, and facilities afforded, for the purchase and alterations of the weights and measures in use at as little expense and trouble as possible. The new system would of course be adopted, after sufficient notice in all Government transactions, on the railways, in the Salt, Customs, and other Departments.

J. Carpendale, Colonel, R. E.
J. D. Sim.

-- No. 8. --

MINUTE by the Honourable the President.

I HAVE read the Report of the Committee appointed to consider the best mode of remodelling the weights and measures of this Presidency.

2. The following is the substance of the recommendations contained in this Report:—

A tola, or rupee of 175 grains, instead of 180, is to be the unit of weight.

80 tolas = 1 seer, or 2 lbs. avoirdupois.

50 seers = 1 maund, or 100 lbs.

20 maunds = 1 candy, or 2,000 lbs.

3. The seer would be sub-divided into $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{12}$, $\frac{1}{36}$ parts, equal respectively to 40 tolas, 20 tolas, 10 tolas, 5 tolas, and $2\frac{1}{2}$ tolas.

4. In like manner, the maund would be divided into $\frac{1}{2}$ maund = 50 lbs., $\frac{1}{4}$ maund = 25 lbs., which is equal to the Madras mercantile maund.

5. As regards measures of length, the Committee propose to adopt the English yard and foot. For land measure they recommend the acre, divided decimally; for measures of capacity they adopt Mr. Bailey's recommendation of a seer, equivalent to an imperial quart, and this they propose to divide into eighths for lesser measures, and to multiply it by 100 for larger measures.

6. The Committee, in point of fact, adopt generally the recommendations of Mr. Bayley, and save themselves the trouble of making specific recommendations by referring to the report of that gentleman.

7. And now as regards the particular recommendations submitted: The Committee, while they point out the absence of all necessary connection between the standard of weight and the current coins of the country, are disposed to maintain the tola as the unit of weight; but they propose to retain the name only, and to separate altogether the coin from the unit of weight by making the latter 175 grains; while the coin, at all events for the present, will retain its standard weight of 180 grains.

8. I am disposed to believe that this will be the simplest mode of getting over a difficulty without running too much counter to Native ideas, fancies, or prejudices. The change, however, will make the present rupee utterly useless as a weight, unless the Act also says that a given number of rupees, say 35, shall be equal to 36 tolas.

9. If, as stated, the seer is well known, and used as an equivalent to 80 tolas, it would certainly be advisable to retain an established weight at its nominal value of 80 tolas or 2 lbs. avoirdupois, and to start from this fixed point both upwards and downwards. Experience, however, has shown that it would be

advisable

advisable to have a name for each division of the scale, and I should think it would be well to start from the tola as below :—

1 tola	=	175 grains.
5 tolas	=	2 oz.
10 tolas	=	4 oz., or whatever name may be considered expedient.
20 tolas	=	8 oz. = $\frac{1}{2}$ lb.
40 tolas	=	16 oz. = 1 lb.
80 tolas	=	1 seer = 2 lb.

I do not think that it would be desirable to jump at once from one seer, or 2 lbs., to 56 seers, or 1 cwt.; on the contrary, I should prefer to maintain the maund at its present, or nearly its present value, and say—

14 seers, or 28 lbs.	=	1 maund.
4 maunds	=	1 cwt.
20 cwt.	=	1 ton.

Or if it be desirable to maintain the candy as a weight, the Table might stand—

5 cwt., or 20 maunds	=	1 candy.
4 candies	=	1 ton.

10. The great object, I believe to be, is to make as little change as possible, either in the weights or their nomenclature, subject, of course, to the condition that the name shall be general as well as the weight, and that the weight will be easily assimilated to the English standards.

11. The linear measures and the land measures have been practically anglicized; the yard with its multiples and sub-multiples is taken as the standard for length; and the acre is the standard land measure. I have my doubts, however, whether it would be wise to divide the acre decimally without giving names to certain of the sub-divisions. Land is sold in towns, or at all events in Madras, by the *ground*; it would be as well to have some divisions of the acre assimilating these to local divisions, and calling them by local names.

12. As regards measures of capacity, I am rather afraid that we shall attempt too much if we insist not only on the adoption of different measures to those in common use, but also compel the adoption of the struck instead of the heaped measure; even in England potatoes are sold by the heaped bushel, as are coals, when they are sold by measure. All that we can do, I think, is to establish measures as nearly approximating to those now in existence as possible; to define the height and diameter of the cylinder which will contain the quantity, and leave it to the seller and buyer to fight out the question of heaped or stricken measure.

13. Whatever may be decided on as the unit, I think that specific names, as I have before stated, should be given to the multiples and sub-multiples, and I do not think that we should jump at once from one measure or seer to 100 measures.

W. T. Denison.

— No. 9. —

MINUTE by the Honourable T. Pycroft, dated 8th May 1865.

THE Committee consider the system of weights and measures, proposed by Mr. W. H. Bayley in 1857, although not scientifically the most perfect, to be practically the best in the present circumstances of this Presidency; and with one modification, that of taking as the unit of weight a tola of 175 grains, they recommend the adoption of this system, as promising the greatest advantages, and causing the least inconvenience to the people.

2. They state shortly the nature of this system, but do not enter into details
 16. D which,

which, as it seems to me, was unnecessary, inasmuch as Mr. Bayley has in his pamphlet described his proposed system with a fullness and clearness, which leave nothing to be desired.

3. For linear measure the Committee recommend, as did Mr. Bayley, that the English yard and foot be adopted. Mr. Bayley left the question of the sub-division of the yard and foot open till it should be settled in England, observing, however, that both Parliamentary Committees that reported on the subject of English weights and measures in 1841 and 1854, had recommended a decimal sub-division, and that it had already been adopted, as regards the *foot*, by English architects and surveyors. The Committee advise the present English sub-divisions by inches, and I am disposed to agree with them.

4. For superficial measurement, Mr. Bayley and the Committee would take the English imperial acre with decimal sub-divisions. I concur with them. This measure so sub-divided is that solely in use in the Madras Revenue Survey.

5. For weight Mr. Bayley proposed a seer of $77\frac{3}{4}$ tolas (each of 180 grains), which would be only five grains short of a double pound of 2 lbs. avoirdupois. He proposed that this seer be sub-divided into 16ths, as the present seer (of 80 tolas) is. For multiple he recommended a mun or maund weight of 50 seers, or exactly* the cwt. of 100 lbs.

* NOTE.—Not *exactly*, if the seer be 5 grains short of 2 lbs. the maund of 50 seers would fall short of the cwt. by $5 \times 50 = 250$ grains about $1\frac{1}{2}$ tola—a quantity, however, practically inappreciable.

6. The Committee adopt the seer of *exactly* 2 lbs. avoirdupois, but take for their unit a tola of 175 grains, 80 of such tolas being equal to one seer.

7. This is the point on which they differ from Mr. Bayley, and I cannot say that this part of their scheme seems to me an improvement upon his. It would, it appears to me, be inconvenient to have two tolas, one of weight of 175 grains, and one of currency at 180. There may be some advantage, although I do not think there is much,† in having weights adjusted to a given currency; but I do not perceive the benefit of making a new weight for the purpose of testing or forming a sub-multiple of one already well known. It would be better, I think, to start with the 2 lb. seer‡ as the unit, and to sub-divide it by the binary scale down to 16ths or perhaps 32nds (1 oz.)

† For example, a bezarman or ryot who wished to test his seer would seldom have 80 or $77\frac{3}{4}$ rupees by him to serve as the test.

‡ That is, a seer *exactly* 2 pounds avoirdupois, not 5 grains short.

8. In fact I do not see why we should not commence at once with the pound avoirdupois or half seer, sub-divided into ounces (16). The difficulty of introducing this, as indeed all English weights and measures, I believe to be much over stated.

9. The first multiple of the seer (or pound) might be the mun or maund of 50 seers or 100 lbs.; but if the English cwt. is ever reduced to 100 lbs., that name should be substituted for the maund or mun. The maund or cwt. should be sub-divided into halves and quarters.

10. Mr. Bayley does not go beyond the maund, but the Committee suggest a candy = 20 maunds or one ton of 2,000 lbs. The objection to this seems to be that the term candy is not like that of seer, known all over India, and that, where it is known, it is only equal to about 500 or 600 lbs., or greatly below the value which would be assigned it in the Committee's scale. When the ton is reduced to 2,000 lbs., it may properly be introduced into Indian metrology as = 20 cwt. For the present, perhaps, we may end as Mr. Bayley does, at the maund.

11. For measures of capacity, dry and liquid, the Committee and Mr. Bayley recommend the imperial quart, sub-divided by eighths, and with a multiple of 100 seers. The quart as a *liquid* measure, I may remark, is already recognised by our Abkarry Acts and Cantonment Act.

12. With the few modifications above noted, the scheme recommended by the Committee might, in my opinion, be adopted. In substance it amounts to the introduction of English weights and measures into British India, a matter of very great importance. As to the mode of introducing the new system, it must I consider, be effected by a legislative enactment; but its introduction should

should be carried out gradually, after fair notice and due facilities for procuring the new standards. We should commence with the Presidency cities, large towns, and cantonments, and thence proceed to the smaller places and rural population. When the uniform system has once been decided on, and authoritatively laid down, it will rapidly make its way. Government, in their many transactions, in the Abkarry salt sales, Commissariat, Public Works, and Ordnance contracts, and at the sea custom-house, the railway companies, and commercial community will all co-operate towards the good end.

T. Pycroft.

— No. 10. —

MINUTE by the Honourable *H. D. Phillips*, dated 29th June 1865.

THIS is a subject on which I do not feel competent to offer an opinion that is likely to be of much, if any value. My perusal of the Committee's Report and consideration of the other papers, together with my recollection of the inconveniences which I have felt and observed during a long career in this Presidency, have, however, satisfied me that great general advantage must result from the introduction of a system based on the clear and simple suggestions of the Committee, and slightly modified in the manner proposed by the Honourable Mr. Pycroft.

H. D. Phillips.

— No. 11. —

B O M B A Y.

From *H. Birdwood*, Esq., Under Secretary to the Government of Bombay, to *A. P. Howell*, Esq., Under Secretary to the Government of India (No. 2008); dated 4 November 1865.

I AM directed to inform you, in reply to your letter, No. 3836, dated 20th June 1864, that, on its receipt, his Excellency the Governor in Council appointed a Committee, composed of Mr. A. F. Bellasis, Commissioner of Customs; Colonel DeLisle, R.E.; and Mr. Andrew Grant, one of the leading members of the mercantile community of Bombay, to consider the question of the possibility and the best method of introducing a uniform system of weights and measures into this country. After a careful inquiry, the Committee submitted a Report, which, together with the Minutes of the several members, I am directed to append.

2. It will be seen that the Committee pronounce in favour (1), of a decimal system of multiples and sub-multiples on the basis; (2), of the English pound and gallon; which latter unit they would apply to all measures of capacity, whether for liquids or dry goods. For linear measure the Committee recommend the adoption of the English inch, foot, yard, and mile; and for the measurement of area, the English acre decimally divided.

3. The Committee do not enter upon any discussion of the theoretical advantages and disadvantages of the decimal system under different circumstances, or of the practical difficulties that would attend its introduction (and especially, perhaps, its partial introduction) into India. Nor do they attempt to establish any simple integral relation between one class of measures and the others. These appear to his Excellency the Governor in Council to be somewhat serious defects in the scheme they propose, while the relation also of any system which it is intended to enforce by authority to the present or proposed unit of value and its divisions, affords another subject for the most careful consideration.

4. On a review of the whole subject, in the light of previous investigations by many able officers as well as of the present Report, it appears to his Excellency in Council that the points which we should seek to attain in any systematic re-adjustment of the weights and measures of India may be classed under the heads of (1), definiteness; (2), convenience, including especially facility of calculation; and (3) assimilation or adaptation to existing systems.

5. Nothing would promote the first object more certainly or more immediately than the adoption of some fixed unit of linear measure, whence might be deduced fixed units of cubical capacity of weight and of value.

6. Whether the English units, under these several heads, should be adopted, is a question that may be discussed from many distinct points of view. The French system, based on the ascertained dimensions of an arc of the meridian, has been extensively adopted; and its introduction into England has been advocated by men of great scientific reputation. But serious practical difficulties lie in the way, difficulties so serious that there is little prospect of any radical change in the present generation. At the same time, it seems certain that no Indian unit can be adopted which shall either correspond precisely (and none but a precise correspondence would answer the purpose) with that of any system in general use, or which, through the various senses attached in different places to the same word, would not cause perhaps greater perplexity, and afford greater openings for fraud than the assumption of the English unit of linear measurement; and if this is to be adopted, it would be vain to wait for the chance of its being settled on a different basis from that on which it now rests. Hence his Excellency the Governor in Council thinks the English foot, or the English yard, might be adopted as the basis of the Indian scheme, with all the advantages of complete definiteness and with a minimum of inconvenience. Both measures are generally known throughout India, and already used by the more intelligent Natives in preference to their own vague and varying measures.

7. It appears far more likely that the measurement of area should eventually be built upon the linear unit than that the latter should be derived by an inverse process from the former. If, therefore, it be thought desirable to carry out the system of measurements with scientific accuracy and completeness, it will be necessary to adopt as the unit of "square" measure the square foot or the square yard, rather than to deduce from the acre a convenient sub-multiple square, one side of which shall furnish a definition for the unit of linear dimension. Whether the maximum defined measure of area should consist of the number of square feet or square yards contained in an acre, or of some other number, is a question to be determined by considerations partly of the comparative advantages and disadvantages of the decimal system, and partly of the inconvenience of disturbing a system already in extensive use.

8. The unit of measure of capacity should, from a scientific point of view, be the cube, as that of the measure of area should be the square, of the linear unit. The measure for grains need not differ from that for liquids. If a linear unit should be definitely adopted, the introduction of a cubical measure, bearing a simple relation to it, ought, sooner or later, to follow as of course; and therefore, perhaps, the sooner the better. In this process the English measures of capacity would be discarded; and this might occasion some temporary inconvenience, until the English measures were reformed, as eventually they must be, on a similar principle.

9. The unit of weight should, theoretically, be a definite bulk of liquid of uniform density at a particular temperature, and this bulk should bear a simple relation to the linear unit. The English pound has not this advantage; but it is in such general use, and approaches so nearly to the half of the popular unit, the seer, that it should probably be adopted, on grounds of convenience, as the standard unit of weight. One hundred pounds might be termed a sotee or (pucka) "maund," and 10 maunds a candy, if it were thought desirable to retain the two latter names. If the English cwt. should be reduced to 100 lbs., as seems not unlikely, there would be at once a practical identity between the two systems.

10. Facility

10. Facility of calculation would be promoted if, along with a decimal division of the monetary scale, a universally decimal system of weights and measures could be introduced. Otherwise, greater inconvenience than advantage would follow through the prices of any but integral quantities of goods often running off into endless decimal fractions. At present, the divisions of money, depending on the prime numbers two and three, correspond to the actual (which are also the simplest) divisions of measurement and weight. It has been doubted whether, even on theoretical grounds, the adoption of a decimal system is to be desired; but it is certainly not to be desired, unless adopted simultaneously for money, and for the measurement of all things in which men ordinarily deal.

11. The question of assimilation resolves itself practically into that of assimilation or adaptation to the English standard. The views of his Excellency in Council on the adoption of the English units of weight and measurement have already been expressed. The adoption of the English scales of multiples and sub-multiples of these units does not seem necessary or desirable. They are based on no uniform or consistent principles, and all authorities on the subject demand their re-adjustment. The adoption of the units alone supplies the means of assimilation to any extent at a future time, and to proceed further at present would almost certainly entail the necessity for fresh disturbance hereafter.

12. His Excellency the Governor in Council thinks, therefore, that while the English pound and the English foot as the units of weight and of length or area, and perhaps a cubic foot, or some simple sub-division of a cubic foot, as a unit of capacity, might be introduced with advantage, nothing more should be attempted at present. To decimal multiples of the unit, with specific names, there could perhaps be no serious objection; but the sub-multiples should be allowed to proceed by popular method of sub-division into annas, or $\frac{1}{16}$ ths, as they will do naturally, unless some other method be prescribed. Complete definiteness and adaptability to the English standards when put on a permanent footing would thus be secured, together with facility of accurate calculation, at as little sacrifice of general convenience as is compatible with the attainment of those important ends.

— No. 12. —

From the President and Members of the Committee for Weights and Measures, to the Chief Secretary to the Government of Bombay (No. 2305); dated 26th August 1865.

IN reply to your letter as per margin, appointing the Commissioner of Customs, Lieutenant Colonel A. DeLisle, and Mr. Andrew Grant, a Committee to deliberate on the best mode of attaining a uniform system of weights and measures for all India, we have now the honour to submit the following report.

No. 2240, dated
24 December 1864,
General Department.

2. Having given this subject their best consideration, the Committee would beg to lay before his Excellency in Council the following suggestions relative to a uniform system of weights and measures for all India:--

I.—WEIGHTS.

3. The Committee are in favour of a decimal system of weights with the English pound avoirdupois as a unit. Should a decimal system of weights be introduced at home, it seems probable that the familiar weight of a pound avoirdupois will be chosen as the unit, and the two systems at home and in India would thus be brought into harmony; while the desirable object of having some check for weights of easy access by the public, such as a certain number of the current coin which exactly corresponds to the unit of weight, is provided for by the selection of the Committee, as the pound avoirdupois exactly corre-

sponds in weight with 70 of the copper pice in general use. The scale would stand thus, with its decimal multiples and sub-multiples—

			A pound. A pound.				
		A tenth of a pound.	1 lb.	lb. 1	A decade.		
	A hundredth of a pound.	1	lb. $\frac{1}{10}$	lb. 10	2	A cental.	
A thousand of a pound.	1	$\frac{1}{10}$	lb. $\frac{1}{100}$	lb. 100	10	1	A millard.
1	$\frac{1}{10}$	$\frac{1}{100}$	lb. $\frac{1}{1000}$	lb. 1,000	100	10	1

4. Names would have to be given to the different weights; and it is suggested that these should be indicative of the decimal division; thus, for the multiples of a pound the English names might be—the unit, one pound; a decade, 10 lbs.; a cental, 100 lbs.; millard, 1,000 lbs. The Hindoostanee names might be—the unit, ek pound; ek duskee, 10 lbs.; ek sotee, 100 lbs.; ek hazaree, 1,000 lbs. In like manner, for the sub-multiples of a pound, the English names might be—the unit, one pound.

a	-	-	-	-	-	-	-	$\frac{1}{10}$ of a lb.
a	-	-	-	-	-	-	-	$\frac{1}{100}$ "
a	-	-	-	-	-	-	-	$\frac{1}{1000}$ "

The Hindoostanee names might be—

The unit, ek pound.								
Ek dus ounsh pound	-	-	-	-	-	-	-	$\frac{1}{10}$ of a lb.
Ek shut ounsh pound	-	-	-	-	-	-	-	$\frac{1}{100}$ "
Ek hazar ounsh pound	-	-	-	-	-	-	-	$\frac{1}{1000}$ "

II.—LIQUID MEASURE.

5. As there seems to be no liquid measure widely adopted as a standard throughout India, the Committee think there would be little difficulty in introducing a measure having the English gallon holding 10 pound avoirdupois of distilled water at the temperature of 60 degrees Fahrenheit as the unit.

6. As in India, the water is usually at a higher temperature than 60 degrees Fahrenheit; and as distilled water is not easily procurable in every-day life, a gallon of clean water might be taken as weighing as nearly 10 lbs as is necessary, for ordinary purposes.

7. The scale, which need only consist of submultiples, would stand thus—

One gallon.	Deci-gallon.	
$\frac{1}{10}$ th of a gallon.	One.	Centi-gallon.
$\frac{1}{100}$ th of a gallon.	$\frac{1}{10}$ th.	One.

Names would also have to be given to the different divisions of the measure, as in

in the case of weights ; thus the English names of the sub-multiples of a gallon might be—the unit, a gallon ; a deci-gallon, $\frac{1}{10}$ of a gallon ; a centi-gallon, $\frac{1}{100}$ th of a gallon. The Hindoostanee names might be—the unit, ek gallon ; ek dus ounsh gallon, $\frac{1}{10}$ th of a gallon ; ek shut ounsh gallon, $\frac{1}{100}$ th of a gallon.

III.—DRY MEASURE.

8. The gallon might be taken as the unit here also, with a decimal scale, which need only consist of multiples. The scale would stand thus—

	Deci-gallon.	One gallon.	One gallon.	Dek-gallon.	
Centi-gallon.	1	$\frac{1}{10}$ of a gallon.	10 gallons.	One.	Cent-gallon.
1	$\frac{1}{10}$	$\frac{1}{100}$ of a gallon.	100 gallons.	Ten.	One.

9. The English names to be given. The multiples might be—the unit, one gallon ; a dek gallon, 10 gallons ; a cent-gallon, 100 gallons ; and the sub-multiples a gallon, a deci-gallon, and a centi-gallon ; and the Hindoostanee names might be—the unit, ek gallon ; ek dus gallon, 10 gallons ; ekso gallon, 100 gallons ; and for the sub-multiples ek gallon, ek dus ounsh gallon, and ek shut ounsh gallon.

IV.—LINEAR MEASURE.

10. The Committee cannot recommend anything more convenient or useful than the English measures of an inch, foot, yard, and mile.

V.—SQUARE OR LAND MEASURE.

11. The English acre as a unit, decimally divided, is what the Committee recommend for adoption.

12. Whatever may be the system of weights and measures eventually adopted by the Government of India, the Committee would strongly urge that, after reasonable notice by proclamation, the Act of Council legalising the new system should be imperatively enforced over all British India, and that Native States should be pressed to adopt a similar system.

13. As any suggestion on the subject in hand may turn out of some practical value, the Committee, in addition to their joint Report above, have given in an Appendix the written opinions of the individual members before they met for consultation.

A. F. Bellasis, President.
A. DeLisle, Lieut. Col., R.E., } Members.
A. Grant, }

MINUTES BY MEMBERS OF THE COMMITTEE.

MINUTE by Lieutenant Colonel A. DeLisle, R.E., dated 1st February 1865.

SOME years ago General Shortrede allowed me to take a note of his scheme for decimal coinage, on a principle which would admit of assimilating weights in India to the English system. Having nothing better to propose myself, I take this opportunity of bringing it forward.

The fundamental change made in this scheme is the reduction of the weight of the rupee or tola from 180 to 175 grains troy, whereby the Indian seer of

80 tolas becomes $80 \times 175 = 14,000$ grains = 2 lbs. exactly; and the kutchra seer $40 \times 175 = 7,000$ grains = 1 lb. exactly; and the maund of 40 seers = 80 lbs exactly,—a number which would admit of more convenient reduction into English denominations than the present imperial maund of $82\frac{2}{7}$ lbs.* Should the cwt. ever be altered into the cental of 100 lbs., a consummation devoutly to be wished, the proposed maund would be exactly $\frac{3}{4}$ cental.

Metal.	Present Rupee Coinage.	Decimal Rupee Coinage.	English Coinage.		Weight of proposed new Decimal Coinage.	—
			Present.	Decimal.		
Copper	Pies 0.96†	Cents $\frac{1}{2}$	- - -	Mil. $\frac{1}{2}$	Grains troy - 35	
	" 1.92	" 1	Farthing - 0.96	" 1	" - 70	
	" 3.84	" 2	Halfpenny - 0.96	" 2	" - 140	
	" 4.76	" 3	- - -	" 3	" -	
	" 5.68	" 4	Penny - 0.96	" 4	" - 280	
	" 7.6	" 5	- - -	" 5	" -	
Silver	Annas 1.6	Cents 10	- - -	Mil. 10	Grains - 17.5	
	" 3.2	" 20	- - -	" 20	" - 35	
	- - -	" 25	Sixpence - - -	- - -	" -	
	- - -	" 40	Tenpence or franc - - -	- - -	" -	
	" 8	" 50	Shilling - - -	Mil. 50	" - 87.5	
	" 16	" 100	Florin - - -	" 100	" 175	
Gold	- - -	500	Half sovereign - - -	- - -	Grains - 61.637	See note at end.
	- - -	1,000	Sovereign - - -	- - -	" - 123.274	

The English alloy is said to be 37 silver to 3 copper.

Indian alloy, 11 silver to 1 copper, or 33 silver to 3 copper.

The English florin weight 174.545 grains, a legal remedy of .727 grains, so that the proposed rupee of .175 grains would be within the remedy; and might, for practical purposes, be considered as identical.

	Grains, Silver.	Grains.
English florin contains - - -	161.645	12.9
" Indian alloy - - -	160.419	14.581
New rupee, English alloy - - -	161.874	13.126
Actual rupee, Indian alloy - - -	165.	15.

It is proposed that the new rupee have the English proportion of alloy, 37 silver to 3 copper; in which case its intrinsic value, according to the silver it contains, would be to that of the actual coin as 165 : 161.874 :: 100 : 98.2, showing a loss in value of about 1.8 per cent.

The value of the new decimal rupee and of the English florin are so nearly alike that it ought not to affect the commercial relations of the two countries.

Taking the present rupee as a standard, the value of the new decimal rupee would be .43d. less, rather more than $\frac{3}{7}$ d. and less than $\frac{7}{16}$ d.

In India the intrinsic value of the decimal rupee, as proposed above, would be four pie less than that of the actual rupee of 180 grains.

Weights.

So far the Indian arrangement of—

80 tolas	=	1 seer,
40 seers	=	1 maund,

has been adhered to; but I submit that, if any change is made at all, it would be very convenient to adopt the English pound as the standard, and use the cental instead of the maund, leaving the pound to be sub-divided into 16th or ounces.

The

* Thirty-five and 72 are not convenient numbers for reduction.

† In the above table the small correction for the diminution in the value of the rupee has been neglected. The weight of the cent has been fixed at 70 grains troy, so that one rupee's weight of copper coin will equal 7,000 grains = 1 lb. avoirdupois. This makes the weight about six grains more than it would be in direct proportion to the old—

Pies.	Grains.	Grains.
Coinage - - 3 - - 1.92	- - 100	- 64; but this disadvantage is necessary to give the means of easily checking the correctness of a pound weight.

The advantage of decimal division is most felt in dealing with large numbers, or the multiples of pounds; the sub-multiples are of less importance, and may be left in the binary scale.

Then 40 tolas	=	1 seer or pound.
100 pounds	=	1 cental.
20 centals	=	1 ton of 2,000 lbs.

All convenient numbers for calculation, and near to those at present in use in England, viz., the cwt. and ton of 2,240 lbs.

1 cental	=	100 lbs.	cost rupees 17·27	80 lbs.	cost 17·27.
1 pound		„ „	0·175	1 lb.	„ 1·7 ²⁷ = ·215.

In the first case we only have to shift the decimal point, in the second we must also divide by eight.

Or, if it is considered preferable to retain the seer of 80 tolas or 2 lbs., the scale might run thus—

80 tolas	=	1 seer	=	2 lbs.
100 seers	=	1 cental	=	200 lbs.
10 centals	=	1 ton	=	2,000 lbs.

The seer and cental and ton would then resemble the French kilo-kilogramme and myriagramme.

Liquid Measure.

The gallon (Imperial = 10 lbs. distilled water at 62° Fahrenheit seems to be the best unit to be adopted, as India has no liquid measure of her own. The gallon is already in use for all purchases of liquids by the Commissariat Department.

The scale might be as under—

4 gills	=	1 pint.
2 pints	=	1 quart.
4 quarts	=	1 gallon.

Cub. in. 8·365 to one gill.

The Bengal rek of 2·0571 pints is very nearly the same as the quart, and might be sub-divided thus—

4 chotanks	=	1 kunki or half-pint.
4 kunkis	=	1 quart or rek.
4 reks	=	1 gallon or pali.

Cub. in. 4·332 to one chotank.

Liquid measure need not extend beyond the gallon.

Dry Measure.

The Bengal mun of 8·2286 gallons is so nearly equal to the bushel of eight gallons that the latter might be adopted without inconvenience.

2 pali or gallons	=	1 phura or peck.
4 phuras	=	1 mun or bushel.
8 muns	=	1 khundi or quarter.

I think, however, it would be a better plan to introduce the system of selling grain by the pound cental instead of by measure.

Measures of Length.

The foot, yard, and mile are now so well understood in most parts of India that they may be adopted without much difficulty. It would be an improvement to make the mile 5,000 feet, or 50 chains of 100 feet each. This is not essential, however, as the mile can be easily sub-divided with the Gunter's chain, 80 to the mile.

Square Measure.

The acre and its sub-divisions are already introduced in the Bombay Revenue Survey.

Note on proposed New Coinage.

It will be observed that the quarter rupee is omitted in the list of new coins, for this reason : in the copper coinage it is more convenient to have 1·2-4 cent. pieces than to have a five-cent. piece ; and if the quarter rupee of 25 cents is retained, the anna piece of 4 cents will not divide into it without a remainder, that is, it would take six annas and one cent. to pay the quarter rupee. It is also objectionable on account of its not being a coin of even tens, while the 20-cent. piece is useful and convenient, as two 20-cent. pieces would equal a franc at par, or tenpence, the present postage on overland letters *vid* Marseilles.

A. DeLisle, Lieut. Colonel, R.E.

MINUTE by *J. D. Inverarity, Esq.*, dated 2nd February 1865.

I AGREE with Lieutenant Colonel DeLisle, and think he could not do better than send in a similar report to Government. A meeting of the members can be convened, if Mr. Grant desires it, for further discussion.

J. D. Inverarity.

MINUTE by *A. Grant, Esq.*, dated 4th April 1865.

I DO not agree with the other members of Committee that Colonel Shortrede's plan is the best, seeing that his plan not only alters existing weights and measures, but also interferes with the currency, thereby causing an incalculable amount of change and confusion, and probably a proportional amount of additional opposition to its introduction and acceptance by the people.

Some of Mr. Bayley's proposals seem reasonable and desirable, while others do not recommend themselves so much.

His plan for linear measurement, taking the English yard as the basis with the already familiar divisions of feet and inches, I think might be adopted.

His plan for land measure, with the acres for a standard and decimal sub-divisions, is also good.

His plan for a unit of weight I don't approve of. I think the English pound avoirdupois might be taken as one unit with decimal sub-divisions and multiples. The measure for capacity might be what holds a pound weight of distilled water at 60° Fahrenheit for a unit with decimal sub-divisions and multiples.

I would suggest a meeting of Committee.

A. Grant.

MINUTE by *A. F. Bellasis, Esq.*, dated 17th June 1865.

I HAVE read Lieutenant Colonel DeLisle's Minute, and I so far concur with him that if a decimal system of weights and measures were in force in Great Britain, I would then adopt the same decimal system for India ; but as I fear the introduction of a decimal system into England is very distant, and as I observe that, even since Mr. W. H. Bayley's pamphlet was published in 1857, two Parliamentary Committees have sat on the subject without coming to any definite result, it seems improbable that any radical change will be made for many years—perhaps not in this century.

2. This being so, I am of opinion that it will be the best to take the English weights as a standard, and to assimilate the current Indian weights to them as near as possible.

3. I would, therefore, take the English pound as a unit, and adopt the following table of weights :

Weights.

Weights.

Pds.	Qrs.	Cwt.	Ton.		Tolas.	$\frac{1}{2}$ Seer.	Seer.	Dhurras.	Maunds.	Khandy.
1				=	40	1				
2				=	80	2	1			
28	1			=	1,120	28	14	1		
112	4	1		=	4,480	112	56	4	1	
2,240	80	20	1	=	89,600	2,240	1,120	80	20	1

4. The above table has the advantage—

(1.)—That the English weights are retained intact.

(2.)—That the Native weights are retained with one exception, viz., that a maund is made to contain 56 seers instead of 40 seers.

(3.)—That 1 lb. contains 16 oz., and that one rupee or one tola contains 16 annas, sub-multiples useful in calculation.

(4.)—That all the totals are divisible by four and by ten, and that also most of the multiples are divisible by the same numbers.

(5.)—That the number of $\frac{1}{2}$ seers in a khandy correspond with the number of lbs. in a ton. The number of dhurras in a khandy correspond with the number of quarters in a ton, and the number of maunds in a khandy with the number of cwts in a ton. Thus there is great uniformity, and very little change in either the English or Native scale of weights, and the familiar names of both are retained; the only exception being the number of seers in a maund, which has been altered from 40 to 56 to make a khandy correspond with a ton.

Linear Measure.

5. There being no real liquid measure in use in India, I would adopt the English measure, viz :—

Pint.	Quart.	Gallon.
1		
2	1	
8	4	1

and these would be easy of introduction, as they are simple, and are already in general use in large towns and military cantonments.

Dry Measure.

6. This should be much the same as the table for weights; the measures being readily checked by their capacity to hold water.

Pounds.	Cwt.	Ton.		Khandy.	Maund or furra.	Seer.	Half seer.
1							$\frac{1}{2}$
2						1	2
112	1				1	56	112
2,240	20	1		1	20	1,120	2,240

Liquid Measure.

7. I would adopt the English standard of an inch, a foot, a yard, and a mile, which are already very generally known in India.

Square Measure.

8. Here I would use the acre with its sub-multiples, as divided by the Revenue Surveys, which now has become universally known by every ryot and owner of land, viz:—

Katee.	Goonta.	Acre.
1		
20	1	
400	20	1

9. I firmly believe that the above simple plan for the uniform adoption of English and Native measures might be very generally and advantageously adopted in India. All that is wanted is that Government should be bold enough to decide upon this or any other plan they may approve, and then to pass a short enactment stating that, from and after a fixed date, such approved weights and measures shall be in universal use throughout all India.

10. It was thus that the Emperor of the French re-modelled and introduced a uniform system of weights and measures, and a decimal coinage into France, after consulting all the savans of Europe. He decided for himself; and the Imperial edict went forth as law. Taking the globe for his model, and dividing the distance between the pole and the equator into ten millions of parts, he obtained a metre for the unit of length, and the sub-multiples and multiples of this metre for his linear measure, and so he despotically and authoritatively framed his other standards of weights, &c.

11. The Governor General of India, and he alone, can exercise like despotic power in India. His edict on the question once passed would command obedience, all imaginary difficulties would vanish, and in a few years the blessings of thousands would testify to the wisdom of Government in authoritatively determining a uniform system of weights and measures.

A. F. Bellasis,
Officiating Commissioner of Customs.

— No. 13. —

EXTRACT from the Proceedings of the Government of Bombay, in the General Department, No. 608; under date 24th March 1866.

READ the following Papers :—

From Major *R. H. Keatinge*, v.c., Political Agent, Katteewar, to *C. Gonne*, Esq., Secretary to the Government of Bombay, No. 26; dated 15th March 1866.

I HAVE the honour to acquaint you, for the information of Government that, at the request of some of the most influential chiefs in Katteewar, I convened a meeting of the representatives of the 26 principal states and talookas in the province to consider what should be done towards securing uniformity in weights and measures throughout Katteewar.

2. I previously addressed the Secretary of the Bombay Chamber of Commerce, and obtained from him any information it was in his power to give regarding the views of the mercantile community in Bombay on this subject.

3. The meeting took place on the 10th instant. Several Carbarees stated that, in consequence of the increasing trade and the closer communication established between the different talookas by the abolition of transit duty, the inconvenience arising from the want of fixed standards was more felt now than heretofore.

4. The present state of the question was then explained by me to the meeting, and it was advised to express its views for the information of Government, but not in the present unsettled state of the question to adopt any active measures.

5. It was then carried unanimously, that for weights either the English pound or the seer of 40 tolas could be adopted without difficulty; the former is already known in many talookas under the name of the "Ruttal," the latter is in very general use.

6. On putting to the assembly which weight was preferable as a unit, the votes were—

For the pound - - - - - 6

For the 40-tola seer - - - - - 19

but all were of opinion that either could be introduced.

7. For a measure of length it was unanimously voted that the English foot and yard were the most desirable units. They are well known.

8. The local beegah is exactly one-third of an acre.

9. The question of a measure of capacity was then considered.

A gallon measure and a cubic foot measure had been prepared, and were shown to the meeting; a committee was then appointed, consisting of—

Azum Shewaweelall Somejee, representative of Bhownuggur, President,	
Sewpursad Muddunjee of Joonaghur - - - - -	} Members.
Moonshee Tricumall of Palitana - - - - -	
Nurbeheshunker of Gondul - - - - -	
Shrewshunker of Dhroll - - - - -	

to consider which of these measures is most adapted to the circumstances of the country. They were requested to report the result to the Political Agent.

10. It was then agreed by a unanimous vote that, in case any of the weights or measures which the meeting had approved should be sanctioned by Government as standards either for the Indian Empire or for the Presidency of Bombay, the chiefs should enforce their adoption in their respective talookas.

11. All the representatives present then expressed a wish that, as soon as the question was decided, the Political Agent should assist them in procuring a large quantity of cast-iron weights according to the new standard.

12. The assembly then broke up.

13. Subsequently the Committee alluded to in paragraph 9 above have reported unanimously that they prefer the gallon measure to the cubic foot as a unit measure of capacity.

14. In reporting these proceedings to Government, it is not necessary for me to point out that they indicate a very pressing want of some legislation on the subject.

15. The desire for uniformity throughout the Province is so great that, if no steps are taken in the matter by Government within our own territory, it is probable that a separate system for this Province will be adopted, and the inconvenience of such a measure will be sensibly felt in Bombay.

MEMORANDUM, No. 780, dated 19th March 1866.

TRANSFERRED to the Revenue Department for consideration.

C. Gonne,
Secretary to the Government of Bombay.

RESOLUTION.—Copy to be submitted to the Government of India for early consideration, with reference to the correspondence ending with the letter from this Government, No. 2008, dated 4th November 1865.

ORDERED, that copies of the above be forwarded to the Political Department of the Secretariat.

F. S. Chapman,
Chief Secretary to the Government of Bombay.

No. 609, dated Bombay, 24th March 1866.

SUBMITTED to the Government of India.

F. S. Chapman,
Chief Secretary to the Government of Bombay.

— No. 14. —

BHAUGULPORE.

From *A. Mackenzie*, Esq., Under Secretary to the Government of Bengal to *E. C. Bayley*, Esq., Secretary to the Government of India (No. 87); dated 4th January 1867.

I AM directed to forward, for submission to the Government of India, the accompanying copy of a letter, No. 564, dated the 7th ultimo, from the Commissioner of the Sonthal Pergunnahs, reporting on the working of an order issued by him, enforcing a uniform standard of weights and measures in those pergunnahs. This report shows, the Lieutenant Governor thinks, the facility with which a change of weights and measures, tending to facilitate or simplify small dealings, may be introduced in this country.

— No. 15. —

From *A. Money, Esq., c. B.*, Commissioner of the Bhaugulpore Division, to the Secretary to the Government of Bengal (No. 564); dated 7th December 1866.

WITH reference to your call for a report on the working of the order enforcing uniformity of weights and measures throughout the Damin, I have the honour to state—

2. My order to the Assistant Commissioners, an extract from which is annexed in the margin, was issued on the 18th of March 1864.

3. I had observed, during my tours in the Damin, that, owing to the great variety of weights and especially of measures, the Sonthals were much cheated by the Bengalee traders, who bought with one measure, and sold with another.

4. The experiment has, on the whole, been successful. I did not anticipate entire success; for a measure of this kind, to give all the results which can be hoped for from it, must be a complete, not a partial, measure,—must apply to a whole country, not to a small province.

5. But as a rule now the authorised weight and measure are the medium of all dealings in the Damin, except perhaps in the Doomka part of it, where the Assistant Commissioner has not taken care to punish, as he should have done, infractions of my order.

6. There has never been occasion anywhere to punish much, but during the first year there were a few convictions. Now the necessity for punishment is rare.

7. No real opposition to the new system has existed, but what difficulties it had to contend with came from the Sonthals themselves, with whom, as with ignorance everywhere, a new thing is always an objectionable thing. Uniformity also is less easy to enforce, and violations of it more difficult to detect, where the usual mode of dealing is by measure, not by weight.

8. The Sonthals generally have, however, begun to appreciate the advantages of uniformity.

9. The Assistant Commissioner of Godda writes—“There is one thing which speaks favourably for the new system; there have never been any *complaints*; and if the Sonthals disliked it, or considered they were sufferers in any way from it, or that the mahajuns tried to over-reach them in consequence of their inability to reckon quickly, they would not be slow in making their grievances known; but I know of no instance, and this I think shows that they are beginning to understand the new system, and are not opposed to it, and before its introduction complaints as to the exactions of mahajuns in buying and selling grain were not uncommon.”

10. The Assistant Commissioner of Pakour says—“As I remarked above, the people have generally adopted the authorised weights and measures, and far from there (as far as has come under my notice) being any opposition to the new system, I think its benefits are now acknowledged by all parties.”

11. The Assistant Commissioner of Rajmehal states—“They do not object however, to the 80-sicca pie, but seem glad of opportunities to get their own corrected and verified.

“I have never found the slightest objection to the new weight, and it only requires attention and perseverance to ensure its complete introduction.”

12. Even in Doomka the Assistant Commissioner considers that — “The new weight and measures are decidedly being adopted gradually.”

13. I trust that ere long the measure introduced first in the Damin will be extended to all Bengal. It would be a boon to the whole country.

“From the 1st of July next the seer of 80 tolahs will be the only lawful and recognised weight in the Damin. Persons using seers of any other weight will be liable to punishment. From the same date, the *pie* measure will be a measure containing half a seer (neither more nor less) of Arrowa rice, one season old. Persons using a *pie* measure of any capacity but this will be liable to punishment.

“The Deputy Commissioner and the Assistant Commissioner will at once cause the purport of these orders to be notified throughout the Damin. After the 1st of July the Assistants should, whenever out in the interior, examine the weights and *pies* by which the traders are buying or selling, and should be careful to punish every contravention of the orders now issued.”

Note.—Arrowa is rice from Dhan, which has been sun-dried, and is supposed to be uniform in weight.

14. The variety of weights and measures in districts is extraordinary. As a sample, I enclose a copy of one of the grain price lists of Bhaugulpore, which, since the famine, are sent weekly to the Revenue Board, and to which I got added the weights which prevail at each place.

MARKET PRICES as they stood on 8th July 1866.

	Rice, per Rupee.	Paddy, per Rupee.	Wheat, per Rupee.	Jannerah, per Rupee.	Gram, per Rupee.	Cullye, per Rupee.	Peas, per Rupee.	
	M. S. CH.	M. S. CH.	M. S. CH.	M. S. CH.	M. S. CH.	M. S. CH.	M. S. CH.	
Bhaugulpore - -	0 8 0	0 12 8	0 9 0	0 6 0	0 9 8	0 9 8	0 10 8	100 tolahs to the seer.
Lockmanpore - -	0 9 0	0 14 8	0 11 0	- -	0 16 0	0 13 0	0 9 8	82 " "
Kummergunge - -	0 9 0	0 14 0	0 11 0	- -	0 11 0	0 11 0	0 13 0	84 " "
Colgong - - -	0 7 0	0 12 0	0 10 0	0 6 0	0 9 0	0 10 0	0 12 0	105 " "
Mudehpoorah - -	0 9 8	0 15 0	0 10 0	0 15 0	0 10 0	0 10 0	0 12 8	64 " "
Kissengunge - -	0 9 0	0 14 0	0 10 0	- -	0 12 0	0 11 0	0 12 0	64 " "
Bongong - - -	0 10 0	0 17 8	0 9 0	0 10 0	0 10 0	0 10 0	0 8 0	64 " "
Banka - - -	0 10 0	0 15 0	0 11 0	0 7 8	0 10 0	0 11 0	0 10 0	80 " "
Kuttoriah - - -	0 9 0	0 13 8	0 11 0	0 10 0	0 10 0	0 10 0	- -	80 " "
Ummerpore - - -	0 9 0	0 14 0	0 10 0	0 6 0	0 9 0	0 10 0	0 10 0	100 " "
Soopoul - - -	0 11 0	0 16 0	0 12 0	- -	- -	0 12 0	- -	64 " "
Pertabunge - - -	0 11 0	0 18 0	0 12 0	- -	0 12 0	0 12 0	0 12 0	64 " "

Bhaugulpore, 12 July 1866.

W. Campbell,
Assistant Superintendent of Police.

— No. 16. —

NORTH WESTERN PROVINCES.

From *R. Simpson*, Esq., Secretary to the Government of the North Western Provinces, to *E. C. Bayley*, Esq., Secretary to the Government of India, (No. 3380 A); dated Nynee Tal, 27th October 1864.

WITH reference to Mr. Officiating Under Secretary Howell's endorsement, No. 3838, dated the 20th June last, with which was forwarded extract from the Proceedings of the Government of India, in the Home Department, with the copy of a resolution recorded by the Governor General in Council, regarding the introduction of one uniform system of weights and measures for British India, I am directed to forward, for submission to his Excellency the Viceroy in Council, the accompanying report, dated 1st ultimo, with enclosures, from Mr. R. Money, Captain F. W. Peile, and Mr. Middleton, who were requested to form themselves into a committee for these provinces to consider and report on the scheme, and to communicate the following remarks of His Honor the Lieutenant Governor on the subject.

2. As regards linear measure, there appears to be little practical difficulty. His Honor is of opinion that the *foot* will be the best and most convenient unit; its subdivision may for the present be left undetermined. The Lieutenant Governor agrees with the Committee that it is desirable to retain the Hindoostanee *hâth*, definitely fixing its length at half a yard; the yard measure being also retained.

3. The superficial measure is a more difficult question, from the enormous number of variations which occur all over India. Mr. Money says, that little violence would be done to the prejudices of the agriculturists if a kutch a beegah, equal exactly to one-fifth of an acre, or 968 square yards, were declared to be

the

the standard for the North Western Provinces. This is no doubt quite correct; but after all, great as the improvement would be, it would apply only to a fraction of India. It might, however, be carried into effect for local convenience.

4. The Lieutenant Governor would advocate the English acre as the standard, using its decimal sub-divisions in all public records. For the rest, no interference, at present at least, should be exercised with local measures beyond the determination of the size of the North Western Provinces kutchah beegah.

5. In fixing the *weight standard*, his Honor thinks Mr. Bayley has failed; his standard, 77·75 tolahs to a seer, is a very awkward one, and besides the weak point, which he himself notices, there is the objection, which he seems to have treated too lightly, that though his seer would be five grains short of 2 lbs. avoirdupois, yet he would define the seer legally as equivalent to two avoirdupois pounds, and declare that a seer of 77·75 tolahs weight would not be condemned as short.

6. It is curious that, in the whole of the discussions that have taken place on the question of weights, the expedient suggested by the Allahabad committee appears never to have struck any one before. It is generally allowed that one of the standard coins of the country should give the unit of weight; and there is great advantage to be gained by having some easy means of referring the Indian to the English weights; but with the rupee as the unit, this is impracticable, as the system is founded on *troy* and not on avoirdupois weights, and the former is practically unknown in commerce. In this system the maund is taken as equal to 82 and 2·7ths lbs. avoirdupois, a most inconvenient measure. The suggestion of the majority of the Allahabad committee seems to meet all difficulties, and the only thing necessary to make it perfect is the coinage of quarter pice, a measure which has been often recommended, and which, in his Honor's opinion, is very necessary on other grounds.

7. Mr. Middleton well describes the difficulties attendant on any attempt to introduce a uniform system of weights; but in advocating the adoption of the Calcutta maund, the Lieutenant Governor thinks he overlooks the fact that *that* would involve as great a change in some parts of the country as the adoption of a maund of 50 seers each of 2 lbs. avoirdupois, while it would have serious defects, which the latter would not possess.

8. His Honor would, therefore, make the standard a 2 lbs. avoirdupois seer of 140 pice, taking care simply to avoid any violent and compulsory enforcement of it in parts of the country which are not yet prepared for the change; but this change cannot be introduced without the quarter-pice coin.

9. As regards the measure of capacity, his Honor does not think that any better proposal can be made than that of Mr. Bayley.

10. As to the mode of introducing these reforms, the remarks and suggestions contained in paragraphs 61 to 79 of Mr. Bayley's paper are very good; the Lieutenant Governor thinks that a year's notice should be given, or as much longer as may be necessary, to enable the mints to prepare standard measures; and, after the expiry of the time named, the change should be made compulsory in all military cantonments, and all towns to which the Municipal Act has been, or may hereafter be, extended. Further than this, his Honor does not think that any compulsory measures should be adopted, but all Government transactions should be in terms of the new system.

— No. 17. —

From *R. Money*, Esq., Junior Member of the Sudder Board of Revenue, North Western Provinces; Captain *F. W. Peile*, Superintending Engineer, Second Circle; and *J. R. Middleton*, Esq., Merchant, Allahabad; to *R. Simson*, Esq., Secretary to the Government of the North Western Provinces; dated Allahabad, 1st September 1864.

WE have the honour to acknowledge the receipt of the orders of Government, (No. 2170 A), dated 21 July last, with a copy of a Resolution by the Right Hon. the Governor General of India in Council (No. 3838), dated 20 June, and a selection of printed papers connected with a proposed reform of the system of weights and measures at present in use in British India, and desiring us to form ourselves into a committee for these provinces to consider and report on the scheme.

2. We beg to state in reply, for his Honor's information, that we have given the subject our careful consideration, of which the result is contained in the remarks. These will refer to memorandum drawn up by Messrs. Money and Middleton, of which copies are annexed.

3. Considering the divisions of the subject in the order in which they have been treated by Mr. Bayley, we concur unanimously in the proposal that the English yard and foot should be adopted as the standard of linear measure. The two modes of sub-division, namely, into feet, and either inches or decimals of a foot, and into sixteenths of a yard, should be maintained. The yard, divided into sixteenths, would be used for the measurement of textile fabrics, and generally of all articles now usually sold by the yard.

4. The foot measure will continue to be used in architectural operations; and Captain Peile suggests that its division should remain an open question, pending the decision of the British Legislature on the subject. If the decimal sub-division should be adopted in England, the same system might, with great advantage, be established in this country. Captain Peile states that it is now used by Captain Limond, who is superintending the erection of the public buildings at Allahabad, and very much facilitates all computations of measurement, whether linear, superficial, or solid. Messrs. Money and Middleton concur in the recommendation.

5. For land measure we unanimously recommend the acre standard, subdivided into beegahs for interior village or field measurements in the North Western Provinces and Bengal, as proposed in Mr. Money's memorandum.

6. In regard to the standard of weights we are not unanimous; Mr. Middleton adheres to the proposal contained in his memorandum that the unit should be a seer of 80 rupees. He is of opinion that there would be no advantage in assimilating the Indian to the English weights. He remarks that there is an enormous trade between England and almost all other countries, and although, with the exception only of the British Colonies, there is no similarity between the weights of other countries and those of England, no inconvenience is experienced. He has been employed in mercantile dealings for many years, and never found any inconvenience to arise from the difference between the Indian and British weights. He considers the first object to be the convenience of the community at large; and, therefore, that the scale to be adopted should be the one which would be most readily accepted by the natives of this country, and in that view he believes the seer of 80 rupees to be the best. If, however, the Legislature should not see fit to make this seer the legal standard, he would concur in recommending the adoption of the seer of 2 lbs. avoirdupois.

7. Captain Peile concurs unreservedly with Mr. Money in recommending the adoption of a seer of 140 pice, equal exactly to 2 lbs. avoirdupois. The sub-divisions of the seer, down to two chittacks, could be obtained with the present copper coinage; and we are all of opinion that a quarter pice (weighing 25 grains) might be coined, and made a legal tender with great advantage to the poorest class of the community. The pice is divided into two dhelas, four chidams, or eight dumrees; and purchases of salt, pepper, tobacco, and some other

other articles are constantly made to the extent of only one dumree, while the equivalent in cowries of a chidam, or quarter pice, is in much more frequent demand. If there were a coinage of quarter pice, we should have the chittack equal to $8\frac{1}{2}$ pice, and the sub-division of the seer would be complete.

8. In regard to the measure of capacity, we are unanimously of opinion that no standard would be more appropriate than the seer, equal to one Imperial quart.

9. We would recommend that the standard weights should be used in all Government transactions so soon as the requisite number could be prepared and distributed; but Captain Peile urged the necessity of allowing some time to elapse before their use should be made compulsory even in cantonments and large stations, in all of which there are many small native dealers who should be permitted to become gradually accustomed to the change of system. Messrs. Money and Middleton now agree in his opinion; and the committee recommend that the use of the standard weights should be made compulsory in all the Presidency towns, cantonments, and civil stations after the lapse of one year from the date of the passing of the Act, and after the lapse of two years their use should be made compulsory throughout British India.

10. The printed papers which accompanied your letter are herewith returned.

NOTE by *R. Money*, Esq., Junior Member of the Sudder Board of Revenue, North-Western Provinces, on proposed Reform of System of Weights and Measures; dated Allahabad, 29th August 1864.

IN regard to linear measure, I concur entirely in the proposal of Mr. Bayley that the English yard and foot, which are very generally known and extensively used throughout India, should be adopted as the standard. The length of the Indian guz is variable, but generally it does not differ much from the English yard, which, in accordance with native usage, might be divided into sixteenths, or "girahs" of $2\frac{1}{2}$ inches.

The superficial measures for land vary so greatly in different parts of India (the kutch a beegah in the North-Western Provinces ranging from about 800 to 1,300 square yards; the Bengal beegah of 1,600; the pucka beegah the North-West from about 2,000 to 5,000;* the Bombay beegah averaging about 2,900; * Hissar 4,970. and the Madras cownie of 6,400 to the vaylie of nearly 32,000), that no selection could be made from them of a standard from which the variations of the several measures now in use would not be as great as they are from the English acre. It may be confidently asserted that there is no one measure of land that is so extensively known by the people of India as the English acre, in which measurements have been made throughout the North-Western Provinces, and largely in the Presidencies of Madras and Bombay. I have, therefore, no hesitation in recommending the adoption of the acre of 4,840 square yards as the standard for land measure.

The decimal sub-division might be conveniently adopted for Government purposes; but I would not immediately impose on the agricultural community the unrestricted obligation to use the acre and its decimal sub-divisions in all their transactions. In the North-Western Provinces, of which I can speak from long experience, although areas are officially recorded in "pucka beegahs," the "kutch a" beegah is used almost invariably for the measurement of fields and the assessment of rents. This kutch a beegah is generally one-third of the beegah called pucka. The pucka beegah that is most extensively used in these provinces, contains 3,025 square yards, and the corresponding kutch a beegah is 1,008. Little violence would be done to the prejudices of the agriculturists if a kutch a beegah, equal exactly to one-fifth of an acre, or 968 square yards, were declared to be the standard for the North-Western Provinces. The measure might be introduced without much difficulty, and the way would thus be prepared for bringing its multiple, the acre, into general use. For the present, at all events, I would allow the native sub-divisions of biswahs and biswansees to be retained. The conversion of beegah measurements into acres and decimals

would be very simple. The biswahs and biswansees can be converted into decimals at sight, and either multiplication by 2, and removal of the decimal point, or division by 5, will give the acres.

<i>e. g.</i>	Beegahs	37	17
5)	37·85	or	<u>37·85</u>
			2
	<u>7·57</u>		<u>7·570</u>

In Bengal if the standard beegah were made one-third of an acre, or 1,613 $\frac{1}{3}$ square yards, it would differ very slightly from the measure now generally used in that province.

As a standard for weights, the advantages which would attend the adoption of a seer equal to 2 lbs. avoirdupois are so obvious as to outweigh all the arguments that can be adduced in favour of any other measure. I demur only to Mr. Bayley's proposal that the weight should be nominally equivalent to 77 $\frac{3}{4}$ tolahs, or 5 grains less than 2 lbs. I admit the discrepancy to be so small that it would be practically inappreciable; but the initiation and perpetuation of even so small an error would, at the least, be very unsatisfactory, if not also, as it appears to me, both inexpedient and unnecessary. The weights of the current copper coins are prescribed by law with the same exactness as those of the silver coinage. By Acts XXI., 1835; XI., 1854; and XIII., 1862, the weight of the copper pice is fixed at 100 grains troy; 140 pice are, therefore, exactly equal in weight to 2 lbs. avoirdupois, and I would declare the standard accordingly. The weight might also be declared to be 77 $\frac{3}{4}$ rupees and $\frac{1}{3}$ masha (or 5 grains).—(See Section 4, Regulation VII., 1833).

By adopting the copper standard as the measure of the seer, the "weak point" adverted to in paragraph 36 of Mr. Bayley's memorandum would be eliminated, for we should have—

$\frac{1}{2}$	seer	=	70	pice.
$\frac{1}{4}$	"	=	35	"
$\frac{1}{8}$	"	=	17 $\frac{1}{2}$	"

the weight of the $\frac{1}{2}$ pice being fixed at 50 grains by Acts XI., 1854, and XIII., 1862; and if a quarter pice were coined, we should have the one-sixteenth seer, or chittack, equal to 8 $\frac{3}{4}$ pice. The seer should further be legally defined as equivalent to 2 lbs. avoirdupois, and there would be no necessity for the declaration "that a seer of 77 $\frac{3}{4}$ tolahs weight would not be condemned as short."*

* Mr. Bayley's memorandum, paragraph 35.

As the maund of 50 seers will correspond exactly with the new English cwt. of 100 lbs., and 20 maunds equal the ton of 2,000 lbs., the exact assimilation to English weights which would be effected by the use of that multiple of the seer renders its adoption, in my opinion, most desirable.

I can suggest no improvement on Mr. Bayley's proposed quart measure of capacity, which is so nearly equivalent to a seer weight of grain.

I would concur with the Madras Board of Revenue in advocating the gradual introduction of the system, making its use compulsory in the first instance in large towns and cantonments only.

The adoption of a rupee weighing 175 grains, of which 80 would exactly equal the seer of 2 lbs. avoirdupois, would provide a most convenient unit of weight, and perfectly adapt the ponderary system to the silver coinage; but as the present intrinsic value of 165 grains pure silver must be retained, and the touch would be thereby raised to 924, that measure would, I suppose, be regarded as impracticable.

R. Money, Junior Member.

MEMORANDUM by *J. R. Middleton, Esq.*

THE appointing of a uniform system of weights and measures for all India is a most gigantic undertaking. From my having purchased cotton and other articles at Bombay many years ago for the China market, and again from the extensive purchases that I have made in cotton during the last two seasons at this part of India, viz., at Ragapore and many villages in Bundelcund, at Etawah and villages near there, and at Allyghur and villages near it, and also at Hatrass and Kashgunje and the villages near those places, purchasing each season to nearly the extent of 10 lakhs of rupees worth, I consider that, from my own personal experience, I should be able to form an opinion on the above subject. In every mart in India that I have had business in, although in some cases they were only 10 koss distant from each other, the maund weight differs, and not only does the difference exist in respect of one mart to another, but the weight of a maund by which each article is purchased at the same mart differs also; for instance, cotton, iron, linseed. Each is sold by a different maund. Each mart has, in general, either one or two market days per week, at which times the natives collect from far and near, from hill and dale, at the market places, with their goods; to change so many different sorts of weights at once would therefore cause much confusion. I would recommend to try and do it gradually, taking at first only two articles of general use, one of dry and one of liquid substance, say cotton and oil, including ghee; as those articles are valuable and produced largely in the three Presidencies. In establishing a uniform weight, a standard easily procurable all over India should also be provided for the purpose of checking the weights. I would, therefore, recommend the Calcutta bazar maund of the weight of 3,200 rupees, or tolaks, or 82 lbs., as the maund to be used all over British India, and to be named the "Imperial maund;" it could be divided into the same parts as it is at present, as such would save much confusion, viz. :—

Seers.	Rupees or Tolaks.
40 One Imperial maund, weighing 82 lbs., or	- - - 3,200
20 Half of adha - - - - - „	- - - 1,600
10 Quarter of pow - - - - - „	- - - 800
5 Eight or pussowrie - - - - - „	- - - 400
1 One seer - - - - -	- - - 80
$\frac{1}{2}$ Adha seer - - - - -	- - - 40
$\frac{1}{4}$ Pow seer - - - - -	- - - 20
$\frac{1}{8}$ Adha pow - - - - -	- - - 10
$\frac{1}{16}$ One chittack - - - - -	- - - 5

Cotton at Bombay is generally sold by the candy of 300 lbs., but this differs in some places. I would recommend the candy to contain five Imperial maunds, or 410 lbs. weight, and the larger weights to be formed also of a certain number of Imperial maunds.

Liquids when sold wholesale, are sold by weight; but in retailing, they are generally sold by a seer or part of a seer measurement; this measurement seer varies on two principles: one as to the weight of the maund that it is usually sold by, each mart having its own maund; the other is according to its specific gravity, one description of liquid being of more or less specific gravity than another; as there is no Imperial or general measure for liquids in India, I would not establish one; but in retail business, where the measure of a seer is used, I would make that measure of each article coincide with the Imperial maund, that is, make a seer measure of each liquid weigh 80 rupees or tolaks. I do not include spirituous liquors, as such are measured by strength, and are, of course, under their own peculiar laws.

There should be a small fine put on after a certain time, say an anna per maund, on parties using other weights or measures.

After the foregoing was put into practice for a couple of years, the result would form a guide as to the practicability of bringing all other articles of commerce under the same rules,

J. R. Middieton.

Allahabad.

P.S.—In superficial or land measure, I can only remark that, if two beegahs were made equal to an acre, that is, 1,280 beegahs to a square mile, such would save the surveyors much trouble. In lineal measure I have not any experience.

J. R. M.

— No. 18. —

P U N J A B.

From *T. H. Thornton*, Esq., Secretary to the Government of Punjab, to *E. C. Bayley*, Esq., Secretary to the Government of India (No. 2310); dated Lahore, 20th November 1866.

WITH reference to the Resolution of the Supreme Government, dated 30th June 1864, regarding a uniform system of weights and measures

Letter from Financial Commissioner, No. 296, dated 6th May 1865, together with an abstract of current weights and measures prepared in this office.

Report of Lahore Committee, dated 29th January 1866.

Resumé of the opinions of the Municipal Committees of Delhi, Umritsur, and Lahore.

for British India, I am directed to forward copies of documents noted on the margin, and to express the Lieutenant Governor's regret that so much delay should have occurred in submitting the present report, owing to the printed volume of selected papers on this subject having been lost or not returned by the Lahore Committee, which necessitated an application to your office for a duplicate copy, which was only received on the 29th ultimo.

This province is, in some respects, unfavourably circumstanced for inquiries such as this, seeing that it has no seaport, and no considerable European capitalists engaged in trade. Hence, the importance of assimilating the weights and measures of this country to those of England is not practically felt here, unless, perhaps, in connection with the railway, and that but to a trifling extent as yet. It is, however, so uniformly urged or admitted in the correspondence circulated by Supreme Government that this is virtually a necessity; that, in the following remarks, the Lieutenant Governor assumes this to be an accepted fact; (1.) on the subject of the measure of length; and (2), superficial measure. Opinions here, as elsewhere, seem to be so nearly unanimous that little need be said.

2. As regards the former measure of length, the advisability of adopting the English yard, and making the cubit or *hāth* to represent one-half of it, is generally admitted. Colonel Lake considers that this would disturb the mode of calculating the ghumao or local measure of superficial area; but his Honor does not himself attach importance to this. Already the English yard is largely used in the Punjab by some classes exclusively, and the *hāth* employed by these is one-half of it; while carpenters and others coming much in contact with the English use no other measure than the inch, foot and yard, with their multiples. Mr. Purdon, Superintending Engineer of Lahore, and a member of the committee, state that, in the timber trade of this province, these measures have already virtually superseded the unsatisfactory and undefined local measures of Tassoo and Paswasi; and the Lieutenant Governor entertains himself no doubt whatever that an authoritative adoption of these standards would be accepted without difficulty, throughout the country. The matter is, in fact, one which does not in any way nearly affect the people in their social relations or dealings, so that it is a matter of comparative indifference to them what standard is adopted.

3. The latter question (*viz.*, that of superficial measure) is differently circumstanced in this respect; at all events, so far as regards land measure; but, nevertheless,

nevertheless, the English acre of 4,840 yards has already been largely introduced into the Punjab, and the people familiarised with its use. Our settlement operations necessarily penetrate into all the recesses of the agricultural population, and the standards which they adopt necessarily become familiarly known, not only to the village accountants, but to the more intelligent of the zemindars and influential chowdries, through whom the masses can be most readily operated upon. The marla, kimāl and ghumao are the measures which have generally prevailed throughout the Punjab; and these are still extensively used among the people. The biswansi, biswas, and bigha are also partially known, and here and there some other local measures are partially in use; but our official authorisation of the exclusive use of the acre, which in some places nearly corresponds with the local ghumao, would, his Honor feels sure, speedily prove effectual in superseding both the ghumao and bigha; though it might be a question whether the subdivision of the acre into the biswa and biswansi, or 1-20th parts, would not be preferable to the adoption of the poles and roods of the English system; these last being still almost wholly unknown even where the acre has been used, while the former terms are readily understood by all.

4. The remaining questions of (1.) weight, and (2.) measure of capacity, cannot be so easily disposed of, and considerable difference of opinion exists in regard to the former; on the decision of which the latter, in a great measure, depends.

5. The standard unit of weight proposed by Mr. Bayley is the tolah; and in regard to the suitability or necessity of this, all seem agreed. Indeed, as its adoption has been thus advocated by an officer of the Madras Presidency, in which this designation of weight does not appear to have been generally employed previous to its introduction by us, the expediency of retaining it can hardly be questioned in Northern India, where it is probably in universal use; so that the only really important and difficult point for determination is what number of grains shall be fixed for the standard tolah. Mr. Bayley has, the Lieutenant Governor thinks, in the 27th paragraph of his pamphlet, conclusively shown that the "avoirdupois" weights are those with which, for the purposes of commerce, it is essential that our Indian system of weights be brought, more or less, into accord. The Lahore Committee, it will be seen, prefers the "troy weight" solely, it would appear, because the "seer," if made to comprise 80 tolahs of 180 grains to the tolah, would exactly equal $2\frac{1}{2}$ lbs. troy; but, although Mr. Bayley's pamphlet was before them, they give no reasons for thus dissenting from Mr. Bayley's opinion; his reasons for the adoption of which, as has been stated, appears to his Honor conclusive. His Honor feels constrained, therefore, to reject the proposal of the Lahore Committee.

6. Together with the adoption of the tolah as the unit, Mr. Bayley decidedly recommends that the "seer" be adopted as the standard of weight for commercial purposes; and in Northern India, at all events, where this designation is the universally accepted one, his recommendations will be at once seconded and approved. He considers it further to be essential that this "seer" corresponds exactly with 2 lbs. avoirdupois. The question, then, for determination is, how this shall be effected with the tolah as the unit of weight?

7. Mr. Bayley shows, that if the tolah were fixed at 175 grains, the seer containing 80 of these would exactly fulfil the above requirement; and he evidently regards it as a matter for regret that this was not fixed as the weight of the standard rupee, instead of 180 grains, the rupee being generally regarded by the community in most parts of India as the equivalent and representative of the tolah. He points out that 175 grains might, in the first instance, have been adopted quite as appropriately as 180 grains, for the rupee of pre-existing currencies varied greatly in weight and value, and Mr. Prinsep's "useful tables" showed that the average weight of some 300 varieties of rupees of native currencies was about 175 grains. The basis from which goldsmiths and others in Northern India calculate their weights is the *rutti*, eight of which are considered to go to a *masha*, or 12th part of a tolah; now, this *rutti* is a small red and black seed of a leguminous creeper, which is actually employed by goldsmiths to the present day for small weightments; so that it will be readily

understood how crude and variable must be a standard based on such a test as this, and how practicable it is, without in any way contravening existing usage, to select the weight of a standard unit within a considerable range.

8. The Government standard rupee having now, however, been established for upwards of 30 years, and superseded all others throughout British India, Mr. Bayley admits that its value cannot well be altered; while if its weight were reduced to 175 grains, without alteration of value, the alloy would be insufficient for durability. He proposes, therefore, to make the standard "seer" contain $77\frac{1}{2}$ tolahs, instead of 80, which would thus be only five grains short of 2lbs. avoirdupois, and accordingly might practically be regarded, for all mercantile purposes, as the equivalent of that weight.

9. Captain Jacob, the Government Astronomer at Madras, strongly objects to the adoption of "so unwieldy a proportion as $77\frac{1}{2}$ —a number incapable of any subdivision;" and in this objection the Lieutenant Governor entirely concurs. On the other hand, it was pointed out in the letter of the Supreme Government to the Government of Fort St. George, No. 171, dated 30th January 1839, that retaining the seer of 80 tolahs, each to be weighing 180 grains, 35 such seers are the exact equivalent of 72lbs. avoirdupois; and it is added, "Through this adjustment of the Indian standard weights, those received from England are used with facility." His Honor very much doubts, however, whether this amount of approximation, or this method of adjustment, would satisfy the mercantile community.

10. The adoption of a tolah of 175 grains appears to his Honor to be the only expedient as yet pointed out, by which a satisfactory standard of comparison with the weights used in British commerce can be secured; and his Honor thinks, therefore, that, whatever difficulties may stand in the way, or whatever anomalies may be involved, this should be insisted on. The silver employed in the mint, his Honor believes, very generally contains a certain amount of gold; until this has been separated by scientific expedients, whether it would be allowable to raise the standard of the metal by allowing this gold to remain, or adding more if needful, his Honor cannot say. But if there be no valid objection to this, the standard rupee might be readily reduced to a weight of 175 grains. If this be not allowable, his Honor would be inclined to concur with Captain Jacob in the opinion that there would be "no longer any use in keeping up an imaginary connection with the coinage," and would fix the tolah at the above weight independently of the rupee. On the introduction of a gold coinage, which is probably not far distant, it might, in that case, be found possible to strike a gold coin corresponding with the tolah of 175 grains, which might then become the standard unit, as the pagoda appears heretofore to have been in Madras (*vide* note to paragraph 22 of Mr. Bayley's pamphlet).

11. The only remaining question is the determination of a standard "measure of capacity"; and in respect to this, there appears to be a very general assent to Mr. Bayley's proposal to adopt the English quart. His proposals on this point entirely approve themselves to his Honor's judgment, so that his Honor need not say anything further in regard to it in this place, save that he agrees with Mr. Bayley in thinking that for solids, *struck* measures only should be allowed; and that his Honor considers it desirable in every way to encourage the preference, already shown in some parts, to use weights rather than measures.

12. His Honor believes that, so soon as standards of weights and measures under the four aspects named by Mr. Bayley shall have been determined on, no serious difficulty will be experienced in most parts of this province in authoritatively enforcing their exclusive adoption, after a reasonable time shall have been allowed for the introduction of the change, more especially if the instrumentality of municipal committees, chowdries, zaildars, and other leading men, be largely employed for making the objects aimed at intelligible to the bulk of the people. Instances have been quoted in the foregoing remarks of the very general adoption of new standards without any occasion for the resort to coercive measures; and, from inquiries which have been made, it has been ascertained that the efforts to which Colonel Lake alludes, as
having

having been made by him when Commissioner of the Jullunder division, have proved to a very great extent successful; still, the Lieutenant Governor is not prepared to advise that an introduction of fixed standards, to be exclusively adopted on pain of punishment, be authoritatively prescribed for all parts from any given date. But his Honor would leave a discretion to local governments to introduce them from time to time in such districts and from such dates as may appear to them expedient, though in all large towns and cantonments, as well as in all Government transactions, he considers that they might, with advantage, be almost immediately introduced, as recommended by Mr. Bayley in his admirable pamphlet.

13. Besides the question of adopting a single standard of each description, Mr. Bayley enters also into the question of the multiples and sub-divisions of each which will be most appropriate. The correspondence which has been circulated contains also remarks by other parties on his suggestions. But the Lieutenant Governor does not think it necessary here to enter on this part of the subject, beyond remarking that Mr. Bayley's proposals appear to his Honor to be in every case judicious, and they have evidently been considered by him with much care, caution, and research.

From Lieutenant Colonel *E. Lake*, Financial Commissioner, Punjab, to *T. H. Thornton*, Esq., Secretary to the Government of Punjab (No. 296); dated Lahore, 6 May 1865.

I HAVE the honour to acknowledge the receipt of your Letter, No. 236, dated 4th November 1864, with enclosures, which are herewith returned, regarding the introduction of an uniform system of weights and measures.

2. Among the selection of papers which have been published on the subject, there is one at page 217, by W. H. Bayley, Esq., of the Madras Civil Service, which goes so fully into the matter, and the suggestions in which are so suitable to the circumstances of India, that it is quite unnecessary to travel over the same ground in the present communication merely to offer my opinion on the conclusions at which he has arrived; and which, at page 230, are detailed as follows:—

I. For linear measure, the English yard or foot.

II. For land measure, the acre, decimally sub-divided.

III. For weight, the seers of 2 lbs. avoirdupois, corresponding to $77\frac{3}{4}$ rupee-weight, with a multiple of a *mun* of 50 seers (= 100 lbs.) and sub-multiples of annas, or 16 lbs. of seers.

IV. For measures of capacity, a seer measure identical with the English quart, and defined as containing 97 tolahs of water at a temperature of 84° , containing when struck about a seer weight of mixed grain, with a multiple of sotee, or 100 seers, and sub-multiples of *atees* or eighths.

3. I concur in the advisability of all these proposals, with the exception of the third, for fixing the weight of a seer at $77\frac{3}{4}$ rupees. Admitting that the extension of railways and the growing trade with the sea-board renders it highly desirable that the Indian seer should be an exact multiple of the English pound avoirdupois, the people have become so accustomed to the seer, which is equal to 80 tolahs in weight, that any change in it now would cause much confusion and inconvenience; and, altogether, the objections to the modifications proposed appear to me greater than the advantages to be gained. Not only the present seer, but all its sub-multiples, can be readily tested by the current coin of the realm; whereas as a *chittack*, or the sub-multiple of Mr. Bayley's proposed seer, could not be thus tested.

4. As regards land measure, the British authorities in the Punjab have had virtually to fix the standard of the *ghumao* now in use in different districts. In some, like Seal-kote and Googaira, it has been made exactly an acre; in others, like Goordaspore and Umritsur, it is somewhat less. But there is a striking want of uniformity throughout the Punjab; I think this is very much to be regretted; and, when revised settlements are effected, the opportunity should be taken, if not for prescribing uniformity, certainly for assimilating the standards, so that if the *ghumao* were not an exact acre, it might always be a sub-multiple of that measure. The *hâth*, or cubit, is the unit of land measure in the Punjab; and could not be fixed at half an English yard, as suggested in the correspondence, without deranging the superficial measures. At the same time, as in Madras, so in the Punjab, the English yard and foot are so well known, and so much used, that their adoption may be safely advocated.

5. Although native measures of capacity are largely in use in some parts of the Punjab for grain, I am not familiar with them; and the natives are becoming so familiar with the standard seer that they now often weigh grain in preference to measuring it. Thus in the Kangra District, where the out-turn of the harvest is always calculated by *topees*, *teemmus*, and *manees*, the measures of capacity with which the people are most familiar when they sell their products, it is by a weight known under the local name *bhuttee*, which is exactly equal to two seers.

6. Here I would observe that in most parts of the Punjab the people recognise a pukka seer and a kutchha seer with all their multiples and sub-multiples. The pukka seer is the standard weight introduced by ourselves; the kutchha seer is the weight familiar to themselves; it varies in different localities, but in the Jullunder Doab, two and a half seers kutchha are equal to our standard seer.

7. Some years ago, I introduced an uniform system of weights throughout the Jullunder Division, requiring the people to supply themselves with iron weights, which were tested and stamped by the chowdrees of bazars and others. At the same time, I notified that there was no objection to the kutchha seer being used, provided it was of the standard weight; so that two and a half kutchha seers were equal to the standard seer.

8. It is true that the standard seer, or its sub-multiples, are not solely in use in the Jullunder Division, for with sugar and some other products it is the custom to buy according to one weight, and sell according to another; but I was requested to put an end to this practice; and I may safely add that the standard seer, or its sub-multiples (under which term I include the kutchha seer), are more largely in use than any other. At the same time it is hopeless to expect that the standard weights will solely be adopted until the use of all others is prohibited by authority.

9. From the absence of all opposition in the Jullunder Division to the measures I took for the introduction of standard weights, as well as from their being so largely in use in other parts of the Punjab, I believe the use of all other weights might be authoritatively prohibited without risk of any kind, and with great advantage to all parties concerned; this also appears from the reports of the municipalities of Lahore, Umritsur, and Delhi, who have now been consulted by the Lieutenant Governor.

10. It might be advisable to defer passing orders regarding measures of capacity until we are better informed regarding them; and it might be politic to exempt, in the first instance, the Trans-Indus Districts; but for the Punjab generally there would be no objection to the issue of a notification fixing a period after which a standard metrical system would be adopted, and after which the use of any other would be prohibited. This would be better than to gradually extend the system, as suggested by Mr. Bayley.

11. The records of this office show that, in 1860, information was called for from all districts as to the weights and measures in use. From these, statements have been compiled in this office, which are herewith submitted; but, as the information thus received does not appear to be very full or very reliable, I purposely abstain from commenting upon it.

WEIGHTS.

Used by Goldsmiths and Bankers	{	Khas khas	-	-	-(8 = 1 chawal).
		Chawal or grains	-	-	-(8 = 1 rutti).
		Rutti	-	-	-(8 = 1 masha).
		Masha	-	-	-(12 = 1 tolah).
		Tolah	-	-	-(5 = 1 chittack).
For general use	{	Chittack	-	-	-(16 = 1 seer).
		Adh-pao	-	-	-(2 chittacks).
		Pao seer	-	-	-(4 ").
		Adh seer	-	-	-(8 ").
		Seer	-	-	-(16 ").
		Dharri	-	-	-(5 seers).
		Dhoun	-	-	-(20 ").
		Mun	-	-	-(maund, 40 seers).
Sealkote	{	Manee			= 4 pandee.
		Pandee			= 12½ paece.
		Paece			= 4 topees.
		Topee			= 4 puropee.

Used by the agriculturists in weighing grain, &c.

Puropee varies from 7 to 8 chittacks according to locality.

Umballah	{	Pucka seer	= little more than 2 lbs. (general use).
		Cutchha "	= 36 tolahs.
Simla	{	Cutchha seer	= 36 tolahs }
		Rutti	= 5 seers } Weighing grain, &c.
Rhotuck	{	Chittack	= 2 oz., 7 pennyweight and 12 gr. }
		Seer	= 2 lbs. 6 oz. }
		Mun	= 100 lbs. }

Weighing grain.

Sirsa - - -	{ Mun bagri " Seikh " Wuttoo	= 25 seers. = 17 " = 48 "	} Weighing grain.
Jhujjur - - -	{ Shahjehanee mun Dharree Seer Powa Chittack	= 35 seers. = 4 " 6 chittacks. = 14 chittacks. = 3 " 2½ tolabs. = 4½ of a tolak.	} Weighing grain.
Jhung - - -	{ 1 Mun 1 Seer Chittack	= 9·6 lbs. = 2·40 " = 0·15 "	} Weighing grain.
Dera Ismael Khan -	{ 1 Seer 1 Mun 1 Pau. 1 Poropa 1 Topah 1 Paee 1 Chouth 1 Chutthee 1 Puth	= 2½ lbs. = 100 " = 1 lb. 15 oz. = 7 lbs. 8 " = 1 gr. 2 lbs. 14 oz. = 4 " 11 " 6½ " = 16 " 9 " 10 " = 65 " 10 " 8 "	
Jhelum - - -	{ 1 Bahadoor Shahee chittack 1 Powa 1 Seer 1 Mun	= 4 tolabs 7 mashas. = 3¾ chittacks. = 15 " = 37½ seers.	} Weighing goods.
Huzara - - -	{ 1 Seer " Zemindaree " Lahoree Bahadoor Shahee	= 2 Co.'s Rs. in excess of 2 lbs. = " " " = 18 " " = 10 " "	} Weighing goods.

(Used in the Kurral and Dhoond countries.)

MEASURES OF LENGTH.

General.

Guz, yard	= 36 inches.
Hâth, cubit	= ½ yard.
Girah = 3 fingers	= 16 = 1 yard.
Kurroo	= 4 feet 6¾ inches.
Coss	= 6,120 feet.
Moura hâth	= 24 inches, for measuring cloth and the sink of a well.
Kurum	= 5 feet.
Git, 4	= yard.
Kan = 3 kurums, or 445	= coss.
Ungli	= ¾ of an inch.
Moosht	= 2·75 inches.
Span	= 8·25.
Gantha	= 2 yards 2 feet 3 inches.
Jarib, or chain	= 10 rods, poles or perches.
Jow	= one-eighth of an inch.

Local.

Leia - - -	{ Bilauk Kurum Coss Guz	= 2 feet 9 inches. = 5½ f-et. = 1½ mile. = 44 inches.—Cloth Measure.	} Land Measure.
Dera Ismael Khan -	{ Coss Kuroh	= 1½ mile. = 2 paces.	} Land Measure.
Dera Ghazi Khan -	Guz	= 5·4 yards.—Cloth Measure.	
Rawul Pindee -	{ Lahoree yard Bahadoor Shahee Toonda yard	= 38 inches. = 32 " = 26 "	} Cloth Measure.
Hoshiarpore -	24 Tussoos	= 1 Akbaree yard.—Wood Measure.	
Kangra - - -	{ Phaari guz Guz, pushmeena	= 8 chireeks, 1 chireek = 4 giras. = 18 giras.	
Lahore - - -	Yard	= 38·5 inches.—Cloth Measure.	

Umballah	-	-	{ Bahadoor Shahee guz = 32 inches—Used by Weavers. Shahjehanee guz = 34 „ Used by Masons.
Loodianah	-	-	{ Ungli = 0·88 inches. Chappa = 3·51 „ Kadam = 5 feet 6 inches.
Delhi	-	-	{ Hâth, or cubit = 1 foot 4·5 inches } Long Measure. Guz, or yard = 2 feet 9 „ }
Goorgaon	-	-	Guz = 33 inches.
Nuh	-	-	Guz = yard and a hand.
Kurnaul	-	-	Guz = 32 inches.—Cloth Measure.
Hissar	-	-	{ Kutchu guz = 2 feet 2 inches. } „ = 2 „ 5 „ } Among Zemindars. „ = 2 „ 3 „ „ = 1 „ 11 „ }
Sirsa	-	-	Moran hâth = 22 inches.—Measuring Cloth.
Rhotuck	-	-	{ Kutchu guz = 2 feet 9½ inches.—Used by Tailors. „ = 2 „ 2 „ „ Weavers.
Jhujjur	-	-	{ Poras = 2 yards. Shahjehanee guz = 2 feet 10 inches.
Mooltan	-	-	{ Mooltanee guz = 32 tussoors = 3 feet 10 ins. } Cloth „ = 24 „ = 2 „ 10½ „ } Measure.
Mozufferghur	-	-	{ Sooltanee guz = 1 yard 10½ inches. Mooltanee guz = 1 „ 8 „ Khyrepore = 1 „ 6½ „ Allypore = 1 „ 4 „ }
Jhelum	-	-	{ Tussoo = 1½ inch. Hâth = 1 foot 10 inches. } Land Measure.
Guzerat	-	-	{ Coss, Shahjehanee = 3·5 miles, English. Jarib = 13·2 poles. Doree = 5·6 „ Gunteh = 3 yards 24 inches. } Land Measure. Dund = 2 „ 16 „ Guz = 44 inches. Bâl, or hair of a horse = 0·10 „ }
Peshawur	-	-	{ Shahee yard = 3 feet 4½ inches.—Measuring cloth, silk, and shawls. Akalee yard = 3 feet 2½ inches.—Cloth measure. Bahadoor Shahee = 3 feet.—Measuring loongees.
Kohat	-	-	Guz = 3 feet 2½ inches.—Cloth measure.
Huzara	-	-	{ Bahadoor Shahee yard — Varies to ½ an inch under the standard. } Cloth measure. Soobakhane yard = 37 inches. Akalee = 37 „ Joolabee = 34 „ Hâth = about 21 inches. } Long measure, Karum = 63 inches. } land and cloth.

MEASURES OF SOLIDITY.

Not known in Kohat, Huzara, Rawul Pindee, Dera Ismael Khan, Dera Ghazi Khan, Mooltan, Delhi, Goorgaon, Kurnaul, Rhotuck, and Sirsa.

In Simla.—Measures are used only in calculating the weight of limestone, kunkur, and sissoo and saul beams, thus—

3 maunds, lime	=	2 feet, cu bic.
32 „ stone	=	1 yard „
1 „ kunkur	=	1 foot „
1 (beam) wood	=	1 „ „

In Loodianah.—Cubic measures are made by the hâth, except where Government employés understand English measure.

In Ferozepore.—There is no specific superficial measure in use. By the usual process of cross-multiplication, length measures are converted into cubic measure.

In Goojranwallah.—The “half guza” is used, which is 16½ inches of the English yard measure, or 33 inches for full guz. This guz is divided into 24 tussoos, and each tussoo is little less than 1½ inch, or little more than 1¼ inch. The “half guza,” and not the full guz, is the measure usually employed in building.

In Umballah and Thanesur.—There is no fixed standard for measuring solids. The contents

contents are arrived at by ascertaining the length, breadth, &c., by the local yard, and multiplying them together.

Lahore	-	-	1 Tussoo	= 33½ inches.
Peshawur	-	-	Architectural measure, measuring timber and buildings,	2 feet 9 inches.
Jhelum	-	-	{ Tussoo	= 1½ inch.
			{ Hâth	= 1 foot 10 inches.
Guzerat	-	-	{ Guz	= 33.50 inches.
			{ Taswassa	= 1.39 „
Leia	-	-	{ Mookassur hâth	= 10.648 cubic inches.
			{ „ guz	= 85.184 „
Googaira	-	-	1 Tussoo	= 1 inch.
Moozufferghur	-	-	24 Tuswassas	= 1 tussoo.
Jhung	-	-	{ Guz	= 2.792 feet.
			{ Tussoo	= 0.116 „
			{ Taswassa	= 0.0485 „
Jhujjur	-	-	Guz	= 2 feet 10 inches.—Measuring buildings.
Hissar	-	-	Guz Shahjehanee	= 2 „ 9 „ „
Jullunder	-	-	24 Tussoos	= 1 guz.—Measuring timber and buildings.
Umritsur	-	-		
Sealkote	-	-		
Umritsur	-	-	24 Tuswassas	= tussoo.
Sealkote	-	-	4 Paens	= tuswassee.
Goordaspore	-	-	1 Tussoo	= 795 cubic inches.

This measurement is used in purchasing wood. The tussoo and its aliquot parts have an anomalous application, being actually lineal measurements, and are equated as follows:—

Tuswassa	= 0.058 of an inch.
24 „	= 1 tussoo = 1.4 of an inch.
24 Tussoos	= 1 guz = 2 feet 9.8 inches.

Hooshyarpore - - - 1 Tussoo = 576 cubic tuswassee, or 6-7ths of a cubic yard,
× 20 cubic inches.

Kangra	-	-	Inches—1,728	inches = 1 foot	} Building.
			27	feet = 1 yard	
			1	tussoo = 1½ inch	} Timber.
			26½	„ = 36 inches	
				= 1 yard	

LAHORE COMMITTEE, DATED THE 29TH JANUARY 1866.

REPORT of the Proceedings of a Committee assembled pursuant to Letter (No. 1384), of the 7th July 1865, from the Secretary to Punjab Government to the Commissioner of Lahore Division, to consider and report upon the subject of introducing one uniform standard of Weights and Measures in the Punjab, composed of the following Members:—

President.—Major O. J. McL. Farrington, Officiating Commissioner.

Members.—W. Purdon, Esq., Civil Engineer, Officiating Superintending Engineer, 3rd Circle.

H. Cope, Esq., Assistant Agent, Punjab Railway.

2. The whole of the correspondence, forming enclosures to the above communication, were carefully perused and fully discussed.

3. The opinions of the Municipal Committees of Lahore, Delhi, and Umritsur appeared clearly in favour of one uniform standard being fixed; the committee are of opinion that, on this point, there can scarcely be doubt; the fraud and confusion that arise are at once apparent. They, therefore, unhesitatingly admit the necessity of a uniform standard, and proceed to record their opinion as to the nature of the standard they would propose, and how they would advocate its introduction.

4. The letter of the Financial Commissioner, No. 291 of the 6th May 1865, to the Secretary to Punjab Government, and Mr. W. H. Bayley's (Madras Civil Service) memorandum on weights and measures, were brought more directly under consideration.

5. As regards linear measure the committee would adopt the English yard or foot; this standard is very simple, and is becoming universally known.

6. For *land* measure they would adopt the acre. The decimal calculation might be made to apply.

7. The standard for weight is less easily disposed of, and admits possibly of a variety of opinions. On a careful consideration of the subject, however, the committee are about to recommend a standard which they cannot but think will be found to possess many advantages,

vantages, amongst which may be pointed out simplicity and its adaptation to the coinage of the country.

8. The committee recommend the adoption of the *troy* weights and *tolah* unit; this plan would secure the assimilation of weights with the current coin (*viz.*, the rupee and *tolah*), and would, moreover, afford the decimal calculation; it would also give a ready mode of reckoning to those who are now in the habit of calculating in *kutch*a maunds until such time as they should become quite conversant with the new standard, thus—

$\frac{1}{4}$ th seer	= 8 oz. <i>troy</i>	= 4 chittacks.
$\frac{1}{2}$ "	= $1\frac{1}{2}$ lb. "	= 16 oz. <i>troy</i> , at 32 <i>tolahs</i> per lb. <i>troy</i> .
1 "	= $2\frac{1}{2}$ lbs. "	*
2 seers	= 5 lbs. "	= 1 <i>vutta</i> or 5 seers, <i>kutch</i> a.
4 <i>pucka</i> seers	= 10 lbs. "	
4 "	= 10 <i>kutch</i> a seers.	
80 <i>tolahs</i>	= 1 seer	= $2\frac{1}{2}$ lbs. <i>troy</i> .
40 seers	= 1 maund	= 100 lbs. " ,

The goldsmiths' weights, as at present existing, fall in with the above, thus—

1 masha	= 8 ruttees	= 15 grains <i>troy</i> .
12 "	= 1 <i>tolah</i>	= 180 grains <i>troy</i> = 1 rupee.

9. The committee were struck with the applicability of certain remarks of the Calcutta assay master in 1833, Mr. J. Prinsep, in his letter, dated 11th April 1833, to the Calcutta Mint Committee; and would here subjoin them:—

Para. 25. "The unit of weight has at all times in India been connected with that of the coin. The seer and maund in the Upper Provinces are invariably derived from the rupee; and whenever the Furruckabad rupee has been current, it has become also the unit of weight.

28. "The universal Hindee word *tolah* is much more expressive and simple, and the *tolah* of many parts of the country very nearly agree in weight with the unit now proposed; thus the system would accord at once with the practice and habits of the country, while it would fall, with wonderful convenience, into the scale of English *troy* weight."

10. The committee having, at their first sitting acknowledged the propriety of the above recommendations, resolved, before closing their report, to ascertain whether there were any obstacles to the introduction of the standard. For this purpose the following persons, from the traders of Lahore, were sent for:—

1. Ghomah Shah, merchant and banker.
2. Sheo Ram, chowdry, of Ukber Munde.
3. Gungaram, merchant.
4. Chujoo Mull, chowdry and trader.

11. These persons readily understood the tables, and asserted they were simple and presented no obstacles to introduction. On the subject of *measures of capacity* they appeared inclined to recommend that such measures should be allowed to obtain, as *zemindars* in many parts were accustomed to them for their grain.

12. The committee would observe that, as far as they can learn, measures of capacity for dry goods are rapidly disappearing; they consider this a subject of congratulation, and, therefore, this point need not further occupy their attention. Measures of capacity for liquids appear unknown; their introduction seems unnecessary.

13. It has been incidentally mentioned by Mr. Purdon, one of the members of this committee, that, owing to the decisive introduction of the British square and cubic measurement for timber, as well as earth and brickwork in the Department Public Works, the mode of country measurement is fast vanishing; and parties making sub-contracts amongst themselves insist on the British measurement. This would go some way to prove that new standards of measurement, provided they are simple, are not difficult of introduction.

14. The committee having recorded the standard that should, in their opinion, be introduced, consider when once Government has resolved on any particular standard, that reasonable notice should be given, after which the standard should be obligatory by legislative enactment, and the use of other than the Imperial standard be considered a punishable offence.

O. J. McL. Farrington, Major.
W. Purdon, C.E.
H. Cope.

* *Vide* Financial Commissioner's letter, No. 296, to Secretary to Punjab Government, dated 6th May 1865, paragraph 5.

RESUMÉ of the Opinions of the Municipal Committees of Delhi, Umritsur, and Lahore, regarding a Uniform System of Weights and Measures for British India.

Delhi.—The authoritative introduction of the Imperial standard of weights and measures would be received with very great satisfaction by the public. At present there are three standards of measure, viz. :—

1. English yard.
2. Badshahee yard, a trifle shorter than the English.
3. Memaree yard, a trifle longer than the badshahee, but not so long as the English.

There are two standards of weights, namely :—

1. The Imperial seer of 80 tolahs.
2. The badshahee seer of 84 tolahs.

The existence of these different standards, in the opinion of the municipal committee, is quite unnecessary, and gives rise to much fraud and dissatisfaction.

Before the mutiny the badshahee pice, differing in value from the Imperial pice, was largely current in Delhi. Its use was prohibited by the military authorities after the mutiny, and it has disappeared. In like manner, in regard to weights and measures, all that is required is an authoritative order, and the evil will be remedied without any difficulty. Such a measure would not be deemed in any way oppressive by the public at large, but on the contrary a great boon.

Umritsur.—The municipal committee generally approve of the proposed measure. The establishment of one scale of Imperial weights and measures all over India would be, in the opinion of the merchants of that city, of great advantage to them, as their trade extends to Scind and Bombay, as well as to Peshawur and Cabul, and will, they expect, on the opening of the Delhi Railway, be carried as far as Calcutta.

Lahore.—At a meeting held in the city, the principal chowdrees, merchants, and native bankers unanimously replied they would like to see the present standards maintained. But the municipal committee consider that a uniform standard would be preferable. At present not only do the standards vary in places at short distances from each other, but even in one and the same place. This holds good in regard to standards of weights and measures of length and capacity.

They propose that the English yard be adopted as the standard as regards measurements of all descriptions.

They recommend in regard to weights, that the seer be the only standard, and that the seer should consist of 96 tolahs.

They would maintain the present standard of weight as regards medicines and jewels.

They would also maintain the present standard of weight as regards silver and gold, which is as follows :—

8 chawul, grains of rice	=	1 rutti.
8 ruttis	=	1 masha.
12 mashas	=	1 tolah.
5 tolahs	=	1 chittack.

— No. 19. —

O U D E.

From *A. H. Harington*, Esq., Junior Secretary to the Chief Commissioner of Oude, to the Under Secretary to the Government of India, Home Department, Simla (No. 3080) ; dated Lucknow, 3 September 1866.

WITH reference to your letter, No. 3326, dated 2nd ultimo, and to previous correspondence, I am directed by the Chief Commissioner to forward the accompanying copy of the report of the committee appointed to consider the subject of the reform of weights and measures in Oude.

REPORT of the Committee appointed to consider the subject of the Reform of Weights and Measures in Oude; dated Lucknow, 11 August 1866.

THE committee appointed under the Government Resolution, dated 20th June 1864, to consider the best means of reforming the existing system of weights and measures in Oude, beg to report as follows :—

It appears necessary to treat only of the subject of weights, as that is the most important to the people generally, and the principles determining them can be applied to measures also.

It has been ascertained, both by reports and by conversation with dealers in all parts of the province, that the greatest possible diversity in the standard of weight obtains. The weight regulating almost all transactions between town and country is the cutcha *punjsaree*, or five-seer weight; and this has been found to vary even in the same village. Further, it is generally represented by stones liable to great abrasion as well as fraudulent diminution.

Continued efforts have been made, since the re-occupation of Oude, to introduce the Government seer of two pounds. Iron weights were obtained from Roorkee, and distributed or sold in all the principal boroughs. In some markets these still appear to be used in retail sales of grain, but the original purchases are all governed by the *punjsaree*.

The pukka seer formerly in use, and still most used in Lucknow, is equal to 96 tolahs in weight, the Government seer to 80 tolahs. The latter is so unpopular that, in 1865, a formal representation was made by the native members of the Municipal Committee concerning the pressure thereby inflicted on the people. It is possible that, for a short time, the dealers might, by a confusion of terms, succeed in selling at the reduced weight for the same price, but it is incredible that such an imposition could endure; still the feeling that the change militates against the common interests, greatly embarrasses any reform introducing a lighter than the customary weight, more particularly when prices are high as at present. It is not too much to say that the attempt to introduce the seer of two pounds has practically failed through the passive resistance of all classes.

The committee hesitate to recommend any approximation of the existing system to that obtaining in England. Such a change would only be from one bad system to another. It would be exceedingly disagreeable to the people of the country, and has no advantage to our own countrymen which cannot be otherwise more perfectly attained.

On the other hand, the French or decimal system is so simple as to ensure its own popularity. It is also generally in use amongst foreign nations, including the Americans, whilst it is far more intelligible even to the English than their own. The committee think it superfluous to repeat the details which have been so well given in the work published on the subject at Madras; but they may mention that their colleague, Maharajah Man Singh, has for some time past been in consultation with the native merchants as to the feasibility of making the proposed change, and has reported favourably thereupon, though, being obliged to leave for Simla, he has left the inquiry still incomplete.

It has been ascertained, however, that, on the plan advocated in the Madras work, the *punjsaree* might be retained with an unappreciable variation from the present average; and Maharajah Man Singh has expressed himself decidedly that the business of the country with the towns might be regulated by a system of weights identical with the French without any difficulty. This the committee consider a cardinal point, as the towns would speedily follow suit.

It is stated that some traders, as meat sellers, tobacco dealers, &c., have for so long sold at a customary price, that, whatever variation of standard weight be made, they will make no difference, that a seer is a seer with them, without reference to its intrinsic gravity. There may be some exceptional cases of this sort; but if the new system be supported by the law, the public would, in course of time, not be losers. Indeed, such virtual fraud could only be attempted by strong monopolists.

If it were resolved to adopt the decimal system, it would be advisable to put in circulation simultaneously a decimal coinage; and, as the rupee is the uni-
versal

versal popular test of the correctness of weights, it would be an advantage if it could be made an equal fraction of the seer weight.

This report has been delayed partly by the President's absence in camp, and partly by the bankruptcy and disappearance of the native member originally appointed, namely, Shah Mukhun Lal. The committee could have wished to postpone its submission until the completion of Maharajah Man Singh's inquiries, but as the Government have pressed for its delivery, and the Maharajah can be conferred with at Simla, it is submitted in this imperfect form, conveying the distinct opinion that no change, except to the decimal system, is worth making.

R. H. Davies, President,

C. W. Hutchinson, Lieut. Col., R.E., Member.

— No. 21. —

CENTRAL PROVINCES.

From *C. Bernard*, Esq., Secretary to the Chief Commissioner of the Central Provinces, to *E. C. Bayley*, Esq., Secretary to the Government of India (No. 358—4278); dated Nagpore, 27 November 1865.

I AM directed to acknowledge your letter (No. 3154), dated 25th October 1865, inquiring what action has been taken on the Foreign Department Resolution (No. 3839), dated 20th June 1864, on the question of a uniform system of weights and measures for British India.

2. In reply, I am now desired to furnish the information called for, and to express the regret of the Chief Commissioner at the resolution of Government having, through inadvertence, remained unanswered.

3. In the month of June 1862, the subject attracted the attention of the Chief Commissioner, and a circular was issued to all officers, pointing out to them the necessity of adopting an Imperial standard. It was also stated that, as according to the general principles of free trade, the owner of any goods could himself fix the quantity he would give in exchange for money or other goods, and that, as a uniform standard of weights could only be enjoined as a matter of public convenience, all steps were to be avoided which would be of a coercive character; and endeavours were to be made only in free communication with the people themselves, in order to bring about the desired end.

4. District officers were also requested to call meetings of the chief traders of towns and villages, to inform them of the object in view, and to explain to them the advantages which would result from the adoption of a uniform standard. The district officers were also desired to present to each large community or corporation a complete set of Imperial and standard weights and measures, and to keep other sets ready for those wishing to purchase them.

5. A statement, showing the results of these measures, was published as a supplement to the local Gazette (copy appended), and those results were briefly as follows:

In the Nagpore Division the people agreed to adopt Imperial weights* and the English yard measure, and some hundred sets of iron standard weights and yard measures have been made up and distributed among them. These weights are now to be found in the chief shops of all towns and most villages of the Nagpore Division.

* Maund,
Seer,
Half-seer,
Quater-seer,
Tolah.

In the Jubbulpore and Nerbudda Divisions a considerable number of these standard weights and measures have been distributed, and the adoption of them publicly proclaimed.

In the Upper Godavery District also the people have agreed to adopt them.

In the Chutteesghur Division, too, some progress has been made, though not to such an extent as elsewhere. Some pattern weights and measures have been made up and distributed among the people.

6. It will be seen, then, that no disinclination on the part of the people to adopt standard weights and measures has been apparent; and Imperial weights and measures have, to a considerable extent, superseded the variable standards in use in nearly every district in the Central Provinces.

7. I am to state that attention has also been given to the subject of a standard and uniform cubic measure of contents. In consequence, however, of there being much difficulty in fixing a suitable standard for this sort of measure, orders in respect of it were carried out in the first instance in the Nagpore District, where a meeting of influential merchants and traders was called, in view to determining a standard measure of capacity; and a measure called a "pylee" was, at the recommendation of the committee, fixed upon.

8. According to local custom the capacity of a pylee is $84\frac{104}{123}$ inches; and this capacity, with a slight increase for the convenience of gauging, has been represented by a rectangular vessel of the following dimensions, viz.:—

$$3'' / 2'' + 3'' / 2'' + 7'' = 85'' 75.$$

The standard thus fixed, having found favour with the people of the Nagpore District, has been introduced into the other districts of the Nagpore Division.

Orders were also issued for its introduction in the whole of the Central Provinces generally.

9. The several Commissioners have since reported that the pylee has been very largely adopted, while in some districts a local standard, somewhat differing from the Nagpore pylee, has been adopted.

10. In conclusion, I am to state that the Chief Commissioner hopes the Government of India will be pleased to consider that all that could be done in the way of introducing standard weights and measures in the Central Provinces has been accomplished, and that no necessity exists for convening a committee such as that suggested in the Foreign Department Resolution above quoted.

SUPPLEMENT to "Central Provinces Gazette," dated Nagpore, 21 February 1863.

WEIGHTS AND MEASURES.

FOR years past desultory attempts have been made in parts of the Nagpore Province to make some approach to a uniform standard of weights and measures. In some districts the attempts made were so far successful that the Imperial seer of 80 rupees weight, and the Imperial maund of 40 seers, were recognised, though not generally used in the bazars of cities and towns. Among traders in British stuffs the English yard measure was also known and employed.

In July 1861, the Commissioner of Nagpore called upon all district officers of the Nagpore Province for a statement showing the weights and measures in use throughout their districts. The Commissioner stated his intention to introduce a uniform standard of weights and measures, and invited Deputy Commissioners to express their opinion as to the feasibility of the measure. Replies received from district officers showed that the weights and measures in use throughout the Nagpore Province were numerous and variable. Such was the variety in weights that a seer in one village often did not weigh the same as a seer in the next village. A seer of wheat did not weigh the same as a seer of butter, and a seer of cotton wool was different in weight from a seer of any other commodity. Weights obtaining one day were sometimes altered the following day in the same bazar. In linear measure the cubit of a man was the general unit of measurement, and this of course varied with the length of each man's arm. In measuring distances the koss was the unit of measurement, but the length of a koss was not the same at all times and in all places; for instance, in some districts a koss was the extreme distance at which the lowing of cattle could be heard. A unit of measurement more variable than this last it would be difficult to imagine. The names of the measures of grain were the same all over the country, and these measures were generally referrible to a unit of weight. But, though the names were identical, the values of the measures differed widely,—the *kundy* of wheat ranged from 120 to 300 Imperial seers. When such a diversity of weights existed, it was not difficult for retail traders to keep one weight for buying and another for selling.

The result of the inquiry made by Colonel Elliot was, that the wisdom of introducing a uniform standard of weights and measures became more apparent than it was before. District officers reported that no great difficulty need be anticipated in introducing Imperial standard weights, and the English yard measure. It was stated that intelligent traders in

all

all large towns were willing to adopt the Imperial seer. An ignorant distaste for all novelty might cause some unwillingness to adopt new weights on the part of the less intelligent retail traders in small towns and villages; but it was anticipated that this would soon wear off when Imperial weights should be in general use in the bazars of large towns.

The Central Provinces were formed into a separate administration; and it was believed that, in the bazars of the Saugor and Nerbuddah territories, weights and measures were nearly as uncertain and variable as they had been found to be in the province of Nagpore. On the 4th June 1862, the Officiating Chief Commissioner addressed a circular to all civil officers in the Central Provinces, instructing them to do their best to introduce a uniform standard of weights and measures into the districts under their control. The following steps were indicated as most likely to secure the end in view:—District officials were to call meetings of traders at all cities and towns, inform them of the object in view, and explain the ultimate advantages likely to ensue if the proposed measures were carried out. To every large corporation was to be presented a set of Imperial standard weights from the quarter chittack up to the seer of 80 rupees weight, it being explained that 40 seers went to the maund. An English yard measure, with feet and inches marked on it, was also to be given. It was recommended that uniform vernacular names should be assigned to these new weights and measures. The weights were to be called *Sircaree wuzun*; the yard measure to be called *Sircaree guz*. As there exist no corresponding vernacular expressions for the English foot and inch, the English names were to be assigned and carefully explained. In order to facilitate the general adoption of standard weights and measures, it was ordered that sets of Imperial standard weights and English yard measures should be made up and kept in store at all large towns, and at sub-divisional Revenue Offices, to be sold at cost price to all applicants. Measures of cubic content being almost unknown in the Central Provinces, matters were not ripe for introducing dry or liquid measures. But district officers were requested to keep the matter in view, and report whether the people were ready generally to adopt any uniform dry measure which might be introduced. It was explained to district officers that, while carefully avoiding any steps that might be felt vexatious, or might savour of coercion, they were diligently to endeavour, in free communication with the people themselves, to effect the desired change:—

During the last six months district officers of the Central Provinces have been devoting more or less attention to the matter. The result of their operations is briefly given below.

NAGPORE DIVISION.

Nagpore.—At a meeting of the principal merchants and traders of the city of Nagpore in August last, it was unanimously decided to adopt the Imperial standard weights of 80 rupees to the seer, and 40 seers to the maund. The adoption of the English yard measure was also considered desirable. Since then some hundred sets of iron standard weights have been made up, and for the most part sold at one and a quarter rupees per set. In the neighbourhood of Nagpore British troops have been cantoned for nearly 50 years, and the introduction of English weights was easier here than in wilder districts. It is believed that not only in the city of Nagpore, but also in the towns and villages of the district, Imperial standard weights will come into general use to the exclusion of all other weights. It does not seem so certain that the English yard measure will be adopted.

Bhundarah.—Here, too, the people have declared themselves ready to adopt Imperial standard weights and the English yard measure. They ask, however, that sets of standard weights be furnished to them. Sets of iron weights were being made up at Nagpore, and by this time are being distributed. Pattern yard measures were also to be furnished. The people of Bhundarah expressed a wish for the introduction of some standard measure of capacity for dry and liquid measure. The Deputy Commissioner is making inquiries, with a view to recommending some well-known measure of cubic content for general adoption.

Chandah.—The chief traders in this town and district have adopted Imperial standard weights. It is said that they are already familiar with the English yard measure. A slight mistake was committed at starting, in making the seer equal to 80 tolahs instead of 80 rupees. This has been corrected; and the advisability of dividing the yard into feet and inches, instead of into the native sub-divisions, *girrahs*, has been pointed out.

Wurdah.—Traders have agreed to adopt Imperial weights and the English yard measure. Here, as in Nagpore, sets of iron weights, with a distinctive stamp on each weight, have been distributed at cost price. Pattern yard measures are to be made. In the great cotton marts of this district the introduction of the Imperial seer and maund will be a great boon. When cotton comes to be carried by railway, the *bhoja*, or bullock load, will cease to be a convenient unit of weight in buying and selling cotton. This should be pointed out, and the adoption of Imperial standard weights urged on the traders of Hingunghat, Arvee, &c.

JUBBULPORE DIVISION.

Jubbulpore.—In this district Imperial weights and yard measures are in general use. Three thousand three hundred and forty-eight weights (from one chittack to five seers) have been

been distributed to applicants at cost price. Two hundred and nineteen graduated yard measures have also been applied for and distributed. The words *Sircaree wuzun* have been stamped on the weights, and *Sircaree guz* on the yard measures. It has been publicly notified throughout the district that traders have adopted the new weights and measures. In the Jubbulpore cantonment the English yard measure has been introduced. Imperial weights were in use previously.

Chindwarrah.—The people were anxious to adopt standard weights and measures. Four hundred sets of Imperial weights have been distributed to applicants in the towns of the Chindwarrah district. Eighty yard measures have also been distributed. Weights and measures are stamped and marked as they are in Jubbulpore. A notification similar to that made in Jubbulpore has been published in Chindwarrah.

Mundlah.—There are few towns in this district. One hundred sets of standard weights and nine yard measures have been distributed. The general adoption of the new weights and measures has been publicly notified. The Deputy Commissioner has distributed 18 oil measures. It is not, however, stated what is the standard of cubic content he has adopted. He has been directed to suspend the issue of measures of cubic content, and to report on the measure he considers to be fitted for general adoption.

Nursingpore.—Considering that this is a rich and populous district, full of large towns, the progress towards the introduction of uniform weights and measures has not been so great as might have been desired. Years ago standard weights were distributed in some of the principal towns, and, since receipt of the circular of July last, something more had been done in the same direction, and a contract was given to a mechanic of Nursingpore for the supply of sets of standard weights and of pattern yard measures. One man could not supply as many weights and measures as were wanted: and, at the instance of the Commissioner, pattern weights and measures have been sent to the several revenue sub-divisional head quarters; and mechanics in the principal towns are turning out sets of standard weights and pattern yard measures. It is anticipated that, by the end of this cold weather, the new weights and measures will have been adopted throughout Nursingpore.

Seonee.—This district is thinly populated, and has few considerable towns. The Deputy Commissioner delayed taking action in the circular of July, and in consequence little has yet been done. About 100 standard weights and measures have been distributed. But it cannot yet be said that Imperial standard weights and the English yard measure have been adopted generally by the traders of the Seonee district. The Deputy Commissioner has been instructed to take the matter up a little more warmly.

The Commissioner reports that, except in Mundlah, nothing has been done towards introducing any standard measure of content. Besides the Deputy Commissioner of Mundlah and Chindwarrah, none of the Deputy Commissioners of the Jubbulpore division have paid attention to the matter. The Commissioner, for his part, believes that if officers set about it properly there would be no prejudice on the part of traders against the adoption of a standard measure of cubic content. He suggests the manufacture and distribution of a few measures containing 500 and 1,000 cubic inches.

SAUGOR DIVISION.

Saugor.—In the towns of this district more than 400 sets of Imperial standard weights have been distributed. The weights are all stamped. At each revenue sub-division a set of stamps and a pattern yard measure are kept, so that sets of standard weights and measures can be made up and distributed to applicants. The standard weights, kept at the revenue sub-divisions, are to be used as tests by which any doubtful weights which may be used in bazars are to be tried. Proclamation has issued that traders of the Saugor district have adopted Imperial standard weights and the English yard measure, to the exclusion of other weights and measures. In the Saugor cantonment Imperial standard weights have long been in use. As in the district, so in the cantonment, the *guz*, sub-divided into *girrahs*, used by clothiers, is being converted into the English yard measure, graduated to feet and inches.

Hoshungabad.—Eight hundred and fifty-four sets of Imperial standard weights and 103 pattern yard measures have been made up and distributed to traders and mechanics in the Hoshungabad district. More are being applied for, and will be made up and sold. Proclamation has issued here as in the Saugor district.

Dumoh.—One hundred and ninety-six sets of Imperial standard weights and 42 pattern yard measures have been made up and sold to applicants. The Deputy Commissioner reports that the traders of Dumoh are glad to buy and use the new weights and measures. A set of standard weights and a pattern yard measure are kept at each sub-divisional head quarters and at each police station-house. The general adoption of the new weights and measures has not been proclaimed in the Dumoh district.

Baitool.—Sets of Imperial standard weights and pattern yard measures have been made up and distributed. Patterns are kept at each sub-divisional head quarters and at each police station-house. It is reported that many traders have availed themselves of the opportunity

opportunity to re-cast their weights on the pattern of the Imperial standard weights. The general adoption of the English yard measure and Imperial standard weights has been proclaimed.

The Deputy Commissioner of Saugor is the only officer in this division who notices the subject of measures of cubic content. He is of opinion that traders are so wedded to their old measures, referrible to a unit of weight, that they will not readily adopt standard measures of cubic content.

CHUTTEESGHUR DIVISION.

In this division but little progress has been made towards the decided end. The Commissioner has sent to Calcutta for pattern weights and measures. The district officers promise to do their best to introduce Imperial standard weights and the English yard measure. Difficulties that do not exist elsewhere stand in the way of all reforms in the Chutteesghur Division. Still weights sufficiently accurate for all practical purposes, and pattern yard measures sufficiently exact, could have been made up at Nagpore and Raepore. When once a pattern is obtained, the rudest blacksmith can fashion weights, and the most unskilful carpenter can make yard measures. It is hoped that district officers will do something themselves, and will invite traders to co-operate in introducing Imperial standard weights. That there is a cereal glut in the markets of Chutteesghur is beyond doubt. When the Eastern road and its feeders are completed, the existing corn trade between Raepore and Nagpore will be vastly increased. The introduction into Chutteesghur of the same weights that are in use at Nagpore will do something to quicken the traffic in corn.

UPPER GODAVERY DISTRICT.

The merchants of Sironcha and other towns in this district have agreed to adopt Imperial standard weights and the English yard measure. Some few sets of weights and pattern yard measures have been made up and distributed. The Deputy Commissioner reports that traders are not inclined to adopt any standard measure of cubic content.

GENERAL REMARKS.

From the above review it may be gathered that traders and the public generally are quite ready to adopt uniform standard weights and measures. The keeping of patterns at convenient places has been enjoined, in order that merchants and dealers may be able to re-cast their weights on the model of Imperial standard weights, and clothiers may graduate their guz measures to feet and inches, as English yard measures are graduated.

It is doubtless true that traders and the public generally are less inclined to adopt uniform measures of content than they are to use Imperial standard weights and the English yard measure; but, as the Commissioner of Jubbulpore remarks, much may be done if officers go the right way about it; steps are being taken to ascertain what measures of content are already in general use, and what are most suitable for general adoption throughout the Central Provinces.

Published by Order of the Officiating Chief Commissioner,

C. Bernard,
Officiating Secretary to Chief Commissioner,
Central Provinces.

— No. 22. —

BRITISH BURMAH.

From Captain *G. E. Fryer*, Assistant Secretary to the Chief Commissioner of British Burmah, to *E. C. Bayley*, Esq., Secretary to the Government of India, Simla (No. 294—2003); dated Rangoon, 13 September 1866.

IN compliance with the request contained in your letter, No. 3325, of the 2nd ultimo, I am directed to submit this Office Letter (No. 272—810), dated 14th November 1864, with enclosures, addressed to the Secretary to the Government of India, Foreign Department, on the subject of weights and measures.

From Major *H. Nelson Davies*, Secretary to the Chief Commissioner of British Burmah, to Colonel *H. M. Durand*, c.B., Secretary to the Government of India, Foreign Department (No. 272—810); dated Rangoon, 14 November 1864.

I HAVE the honour, by direction of the Chief Commissioner, to acknowledge the receipt of docket No. 611, dated 7th July last, from Mr. Under Secretary C. U. Aitchison, forwarding copy of resolution by the Right Honourable the Governor General of India in Council, in the Home Department, under date the 20th June 1864. This resolution refers to the various systems of weights and measures in British India, and directs the assembly of a committee of well-selected persons in each province to report on that important subject.

2. Having received this resolution, I, on the 15th of August last, circulated it to the three divisions of this province, with a minute, and directed a committee to be formed at each chief town, namely, at Rangoon, at Moulmein, and at Akyab.

3. I now beg to submit a copy of that minute and of the report of each

committee as noted in the margin, together with the letters transmitting them. Each committee was well selected. Each contained men of considerable official standing and ability in this province, and merchants of the longest and widest experience.

From the Commissioner, Tenasserim (No. 486), dated 13 September 1864, and Report of Committee at Moulmein, dated 29 August 1864.

From the Local Committee of Rangoon, to the Secretary to the Chief Commissioner, dated 5 September 1864.

From the Commissioner of Arracan (No. 105), dated 16 September 1864, and Report of the Akyab Committee, dated 12 September 1864.

4. It may be premised that the Burmese system of weights and measures is used throughout the whole country, and also (which is important to be noted) in the adjoining countries to the eastward. The mode by which grain is sold is universally by measure, whether in wholesale or retail transactions. The whole of the grain now shipped from the several ports and exported by river—which trade amounts annually to 450,000 tons—is purchased entirely by measure.

5. The standard grain measure of Burmah is called “a basket or bushel.” The royal standard basket at the capital contains a capacity very nearly identical with the English bushel of 2218·192-cubic inches. On this account a basket of that exact capacity was introduced, some years ago into all bazars throughout Pegu, for retail transactions. It is also used at the frontier custom houses; but as it would have been impossible to introduce this standard basket into the country generally without a legislative Act, no attempt was made to do so. The consequence is that the size of baskets for the sale of grain throughout the country varies almost at every village, though all are intended to be of the original capacity sanctioned under the Burmese Government.

6. All the committees unanimously agree that the Burmese method of selling grain by measure must be preserved; and that, in order to have one general and fixed standard, the English “Imperial bushel” should be adopted. In that standard

standard measure and its fractions all sales, wholesale and retail, should be made; and the use of that measure should be compulsory. Twelve months' notice probably should be given, in order that people may be made aware of the law, and have time to provide themselves with standard measures properly stamped. The time when it should take effect is from June to November, when the change would cause least inconvenience. These measures should in the first instance be made by Government, and be sold at cost price to the people. They should be made of wood, but standard ones of metal should be made to be retained in Government offices.

7. Mention has been made in the committees' reports of liquid measure, but for the ordinary transactions of the country the grain measure and its fractions will suffice. These are given in the margin. In Arracan, where the basket or bushel is smaller than in the rest of British Burmah, the half bushel or *kliwai* will constitute the standard.

4 tsalays	=	1 byee.
2 byees	=	1 tsaroot.
2 tsaroots	=	1 tseit
2 tseits	=	1 kliwai.
2 kliwais	=	1 ten or bushel.

8. As regard weights, the committees consider that the Burmese weights now universally used should be retained; a fixed standard be legalised, and the use of it enforced. But the Arracan committee recommend that the Indian maund and seer should be introduced.

9. The Chief Commissioner admits that there is an immense advantage in the ponderary system being founded on the coin. But he considers it will be found impracticable to supersede the weights now universally used throughout the country. The foundation of these is the tickal, which is stated by Prinsep to weigh 252 grains troy. One hundred tickals equal one viss, which is exactly 365 pounds avoirdupois and 140 tolah weight. The committees, and especially the committee of Rangoon, strongly recommend that no change shall be made in this system, and consider that a change would in fact be impracticable. In this the Chief Commissioner entirely concurs.

10. English weights are used in the sale of all European goods in the shops of the seaport towns. It appears, then, that the weights of British Burmah should be left alone; and the capacity of the "basket or bushel," to be used in lieu of the ordinary existing uncertain measure, to be declared to be 2218.192 cubic inches; the use of the same to be made compulsory under penalties, and 12 months' notice to be given before it is brought into use. The time when it is brought into use to fall between the months of June and November when commerce is less likely to be inconvenienced by the change than if introduced at any other period of the year.

MINUTE by the Chief Commissioner of British Burmah, on the subject of Weights and Measures for British Burmah; dated Rangoon, 15 August 1864.

LAST year the subject of weights and measures for British Burmah was fully discussed at each of the principal ports in British Burmah. I believe that all parties agreed as to the necessity of having a fixed standard for grain measures; the only difficulty which existed was that of procuring a legislative enactment making the observance or use of a given standard weight or measure compulsory under penalties upon the population at large.

Since then the question of weights and measures throughout the whole of British India has been brought before Government; and it is necessary that there should now be a declaration of opinion by those most interested, and those most likely to know the wants of the country, as to what is required on this important subject for British Burmah.

The Chief Commissioner considers this object can be best attained by committees sitting at the principal towns, namely, at Rangoon, at Moulmein, and at Akyab.

The questions which will be of primary consequence to discuss, the Chief Commissioner ventures to observe, will be as follows:—

In regard to the position of British Burmah and the system of weights and measures already existing, and those existing in the adjoining countries, will it be advantageous to establish the maund and seer of India, that is, the seer of 80 tolahs, of which the rupee is the basis, or to adhere to the method of sale of grain as at present existing throughout the province by the measure called the basket or bushel?

It is well known that, from there being no positive standard basket in British Burmah for wholesale transactions, the capacity of those in use varies considerably, but the royal basket of Ava comes very near to the Imperial standard bushel of England (believed to

contain 2218·19 cubic inches), and can be adopted without difficulty throughout British Burmah. In bazars for daily-retail sale this basket is the existing legal measure throughout Pegu. Is it recommended that this basket shall be universally adopted?

In Arracan a half bushel would come very near to the capacity of the basket now used at Akyab.

Further south in that division the same basket exists as elsewhere in British Burmah.

The divisions of the English bushel correspond exactly with those of the Burmese basket, so that there really would be no change, except that of having one general standard basket instead of variety of sizes.

It will be proper to consider whether at first the standard basket should be made compulsory only at the seaport towns or at such places only to which the Chief Commissioner may be empowered under an Act of the Legislature to extend it.

It is desirable to consider whether by law it shall be obligatory to sell paddy, rice, and all grain by measure or by weights.

With regard to weights the first question will be—Should we adopt the Indian seer of 80 tolahs and the Indian weights similarly, or retain the existing Burmese weights for all transactions?

The basis of the Burmese weights is the tickal, which contains 252 grains troy; one hundred tickals equal one viss (365 pounds avoirdupois), and is exactly equivalent to 140 tolah-weight of India; these weights are universally used in every little village throughout the country and in the Burmese territory.

Do we require to notice how English weights should be received or used either at the seaport towns or otherwise? On this point an opinion should be recorded.

Should the basket measure and the tickal or viss be made legal standard weights and measures, what is recommended in order that trustworthy standards for use may be sold or distributed throughout the whole country to the people?

What period of notice should be given in order that people may know the law is to come in force?

The Chief Commissioner has in the Minute endeavoured to bring to notice the principal points which will have to be considered by the committees, and he begs that they will have the goodness to favour him with their opinions on these points, and on any others which may occur to them in connection with this important subject.

A. P. Phayre, Colonel,
Chief Commissioner of British Burmah.

From Colonel *A. Fytche*, Commissioner of the Tenasserim Division of British Burmah, to Major *H. Nelson Davies*, Secretary to the Chief Commissioner of British Burmah, Rangoon (No. 486); dated Moulmein, 13 September 1864.

WITH reference to your letter (No. 2700), dated 15th ultimo, I have the honour to enclose herewith the proceedings of the committee, held here, on weights and measures.

2. I concur fully in the whole of the suggestions made by the committee, and consider that there would be no difficulty in establishing the English bushel, with the subdivisions of the Burmese basket, viz., 16 byes, both for wholesale and retail transactions, throughout the country. I consider that the introduction of any Indian weight or measure, such as the maund or seer weight, would be most inadvisable.

3. The Burmese viss of 365 lbs. avoirdupois, with its different subdivisions, should be retained for country produce; and, where the parties agree to it, English weights could be used in the purchase and sale of European commodities, such being the custom at present.

4. The notice proposed to be issued for the introduction of the British measure, as also the form and the manner these measures should be provided, appear to be very proper.

5. The documents which accompanied your letter under reply are returned herewith.

REPORT of the Committee assembled at the Office of the Deputy Commissioner on 29th August 1864, to take into consideration the Regulation of the Weights and Measures for British Burmah.

PRESENT:

Colonel D. Brown, Deputy Commissioner.
T. J. Fallon, Esq., Town Magistrate.
Robert Hannay, Esq., Honorary Magistrate.
D. McDonald, Esq.
J. H. Miller, Esq.

READ letter (No. 163 of 1864), from the Commissioner of Tenasserim Division, and the various documents accompanying the same, relating to the regulation of the weights and measures for British Burmah having been fully considered, we beg to submit the following opinions and remarks thereon:—

The absence of a fixed standard of weights and measures in Burmah is felt as a great inconvenience to trade, and it would benefit all classes to have the weights and measures of the country regulated by law.

The standards of weights and *lineal* measure appear to have been settled by law or custom, and have been long in use. The practical unit of weight being the viss of 365 lbs. avoirdupois, and that of the lineal measure the cubit of 18 inches and the foot; the former is used in measuring cloths, &c., and the latter for timber, and both are well understood and found convenient by the whole community, and can be readily verified by their English equivalents; in fact, English weights and foot rules are largely used in practice, being easily convertible into the Burmese denominations of viss and cubit, and we would not recommend these being disturbed.

The measures of capacity, both for liquids and dry commodities, are in a very unsatisfactory state, and require to be regulated by authority. The “old English gallon” is still partially in use in the bazars and shops; we would recommend its being abolished, and the imperial gallon used in its stead.

The “dry measure” of capacity, the “basket,” is the most uncertain of all, while it is of the utmost importance to have it correct; for, besides being used in the purchase of the daily food of the people, it is essential to fair commercial dealings in some of the principal exports of the country. We believe that no recognised standard of “dry measure” exists, certainly none is in use; and the greatest conceivable variety exist in what is denominated the “Burman basket,” ranging from 62 lbs. up to 78 lbs. of rice in measures in actual use in the export trade; and it need hardly be noticed that the smallest size is that used by Europeans in their purchases. We, therefore, think it most desirable that a “dry measure” of capacity should be established by law.

The next question for consideration is the capacity of the required standard for “dry measure;” but in this we are not able to gain any definite information either from the papers before us, or from inquiries made of those most likely to assist us; nearly all recommend the Burman basket in preference to the English bushel, but none appear to know what is the actual capacity of the Burman or Ava basket. It does not help us to a solution of the question to say that it contains 16 or 18 tabees or viss, for the viss being the only certain guide in this definition, we are not told what commodity or substance is used for the test, a viss of one thing may be double the bulk of another. The only approximation to the actual cubic contents of the basket of Ava that we have been able to gather is contained in the minute of the Chief Commissioner, where, after stating that there is no positive standard basket in British Burmah, he goes on to say that “the royal basket of Ava comes very near to the Imperial standard bushel of England.” In McCulloch’s Commercial Dictionary (Article Rangoon), it is stated that the basket ought to weigh 16 viss of clean rice, or 58·4 lbs. avoirdupois; a basket of clean table rice purchased for the experiment in Moulmein bazar weighed 59½ lbs., while an English bushel of the same rice weighed 63½ lbs.; and this we believe is all that will ever be known of it, for it may be fairly questioned if the Burmese have either the means or the skill to construct either a standard measure of capacity, or a scale beam that would be found rigorously exact.

It thence follow that the various baskets now in use have no common basis, but are purely arbitrary measures made to suit individual interests. We would, therefore, recommend a basket for British Burmah to be made and fixed by law; and as the English bushel is found to be very nearly the same with the basket in use in Burmah Proper, and the subdivisions of both being alike, we see no objections to making that the standard for British Burmah, retaining the native denominations of basket and its sub-divisions.

Regarding the introduction of Indian weights and measures into British Burmah, we do not think such a change would be acceptable to any class of the community; they might be used by Indian traders at the sea-ports in dealing with their own countrymen, but Europeans do not require them; and to the Burmese in the interior, and the natives of the neighbouring States, they would be wholly useless. The Burmese readily adopt many European improvements, but have little respect for Indian customs, which they consider are inferior to their own. We would, therefore, recommend that in the sale of grain, the *measure* be retained instead of introducing the sale by weight, and that the standard basket be made compulsory throughout the country, both for wholesale and retail.

The use of English weights has already become common both for the purchase and sale of certain English commodities when the English denominations of cwt.s., qrs., and lbs. are

retained, and also for large transactions in Native produce, which are usually weighed by English weights, and converted into Burmese denominations; in making up accounts this practice prevails very generally throughout British India, and should not be interfered with in Burmah; this will render it necessary to keep a standard test weight for English as well as country weights.

If six months' notice be given for the introduction of the standard basket, we think it would be sufficient time for the people to prepare for the new measures, and to complete or adjust existing engagements to the change. Tenders might be invited for a certain number to be made for Government, to be supplied to the public at cost price; but parties should be allowed to make their own measures by adhering to the capacity and form of the standard, and having them stamped; after being verified, the distribution in the district might be made through the local officers, who would indent on the chief authority for any number likely to be required; and it is probable that the agriculturists would register their requirements through their native headmen, on notice of the change being given.

We have only further to remark that, in constructing measures of capacity for grain, the form of the vessel should not be overlooked. We would recommend a cylinder as the best form, as all angular and irregular-shaped vessels, although corresponding with each other in the measurement of fluids, will vary considerably if applied to grain or other dry commodities.

Note by Mr. D. McDonald.—I am of opinion that all measures should be made by Government only, and none by private individuals.

Moulmein, 7 September 1864.

(signed) *J. H. Miller,*
Honorary Secretary.

From the Rangoon Local Committee appointed to inquire into the subject of Weights and Measures for British India, to Major *H. Nelson Davies*, Secretary to the Chief Commissioner, and Agent to the Governor General; dated Rangoon, 5th September 1864.

* President:—Major G. Faithfull.

Members:—G. Bullock, Esq.; J. Black, Esq.; E. Fowle, Esq.; R. S. Edwards, Esq.; and Captain E. B. Sladen.

WITH reference to your letter (No. 02699), of the 15th instant, we* have the honour herewith to report the result of our inquiry upon the subject of a uniform system of weights and measures for British India.

2. Before entering upon the more immediate subject of our report, we are desirous of accounting in some measure for the apparently short space of time given to our deliberations as compared with the magnitude and importance of the subject which has been submitted for opinion.

3. In venturing an explanation, we may first be allowed to mention that our committee comprises amongst its members the Deputy Commissioner of the Rangoon district, the Collector of Customs of Rangoon, two of the leading merchants of British Burmah, a resident gentleman of Rangoon, who is acknowledged to possess a very extensive and varied experience in all matters appertaining to the peculiarities of Burmah and its people, and the Rangoon town magistrate.

4. One very natural, and at the same time noticeable, feature in the proceedings of a committee thus formed is, that there has resulted an almost unanimous decision on the several questions brought under notice. Argument has not been wanting, but that very argument has been connected with subjects, which for many years past could not fail to have received the attention of our committee, whose interests are specially identified with those of British Burmah. We have found in a most remarkable degree that our pre-conceived knowledge and opinions only tended to make us arrive at a unanimous finding and resolution on the various questions involved in the subject of our inquiry. This must account for the fact that our committee has held but one general sitting; and though we have been consciously impressed with the gravity of the matter we have had to deal with, in its more extended form, as applied to the wants and necessities of British India as a whole, we naturally feel somewhat complacent and satisfied under the honest conviction that our inquiry has resulted in an expression of opinions and suggestions calculated to advance the material prosperity, of one large portion at least, of Her Majesty's dominions in the East.

5. In giving expression to these opinions, we are bound to notice that as the representatives of a province (for the purposes of an inquiry), or as a provincial local committee, we have not not been able to forget that, in investigating the question of one uniform system of weights and measures for all British India, it is not irrelevant to our inquiry to regard with importance the present condition of foreign States contiguous to ourselves, and the effect which any change we may suggest may exercise not only on them, but on ourselves in our dealings with them.

6. In fact, we cannot but look upon this portion of our inquiry as one which should particularly be allowed its weight and importance in determining a point which must seriously affect our common traffic dealings with foreign States contiguous to British Burmah, and on which British Burmah mainly depends for commercial support. What we mean is that, under present existing circumstances, British Burmah uses, in common with Burmah Proper,

Proper, almost one uniform system of weights and measures; and that, deriving, as we do, a very large amount of our supplies for export trade from provinces beyond our frontiers, any change we may be led to adopt with a view of assimilating British Burmah with British India will be likely to entail endless confusion, and misconception and difficulty in our commercial dealings with those States, if the same change cannot practically be extended to them.

7. We frankly acknowledge that the difficulty of coping in any satisfactory manner with the broad question which relates to the adoption of one uniform system of weights and measures for the whole of British India, has made us diffident in expressing any general opinion beyond the vocation or requirements of a mere local committee.

8. We think we are best fulfilling our duties as a local committee in limiting the scope of our report to the question, in so far *only* as our knowledge enables us to form just and sound deductions from actual experience, leaving it, in common with other local committees, to a central committee, or to the Government of India, in collating the several reports which will be submitted to it to evolve general conclusions.

9. It is only necessary to remark further in this tedious preface to our report, the mode and manner in which our local committee has managed its inquiry. We have been principally guided by the able minute forwarded to us by the Chief Commissioner. A secretary was appointed to record proceedings, and draw up a final report. Every question for discussion detailed in the Chief Commissioner's Minute, has been laid before us separately and in order, and the result of our argument on each question was at the time noted down in the proceedings by the secretary. Every member at the same time recorded roughly in writing his own reasons upon each question; and the whole of the papers were, at the conclusion of the committee's sitting, made over to the secretary as a basis on which to draw up the committee's final report.

10. The points of inquiry prescribed in the Chief Commissioner's Minute, resolve themselves into a series of questions, which we propose to make the basis of our inquiry and report.

11. *1st Question.*—The prominent and leading question is undoubtedly that in which we are asked to state whether, in our opinion, having all due regard to British Burmah and the system of weights and measures existing therein, and those known to exist in the adjacent countries or foreign States contiguous to British Burmah, it will be advantageous to establish the maund or seer of India, or to adhere to the method of sale of grain by the basket as at present in use throughout the province or throughout British Burmah.

12. The fact that this point of primary investigation met with almost immediate unanimity of opinion in favour of the present existing system, will of itself argue our localisation.

13. We justly concluded that one uniform (and if possible) universal measure of capacity was a grand desideratum in the sale and purchase of all kinds of grain. Our internal trade in grain, and our export trade in this staple commodity to Europe and other countries foreign to British India, is infinitely greater in extent than our dealings in the same or any other article of commerce with British India. In short, rice forms our chief export trade; and that trade has no real reference to any system of measures which can be said to require assimilation with the system of measures in use in British India. No advantages would be likely to accrue from the introduction into British Burmah of Indian measures of capacity, unless some compensating influences in other articles or commodities of traffic between British India and British Burmah outweighed the importance of non-intervention in the present immense export trade in grain between British Burmah and foreign Europe. We are convinced no such compensating influence exist.

14. We find, however, that, even under our own prevailing system of baskets or bushel measure, a very large opening exists for fraud and misconception, from the circumstance that the system itself is not compulsory, and that the size of the basket is often made to vary. Though we have a system, therefore, we lack uniformity; as a consequence, a door is opened for dishonesty in their daily transactions by traders in grain of different denominations, who take advantage of a state of uncertainty to adopt at will various standards of their own.

15. The rice basket in use, according to its actual standard capacity, professes to weigh about 64 lbs., and yet each merchant's standard varies between 66 lbs. and 80 lbs. Chinese traders, who are thriftily inclined, even exceed this maximum weight; so that, although we have a measure of capacity, it is of mere nominal value, and subject in extent to the caprices of every trader, great and small. The basket measure of British Burmah owes its origin, we believe, to the royal basket of Ava, to which it is supposed to be assimilated both in size and capacity. This royal basket of Ava, in its integrity, approaches within a mere inappreciable difference to the size and capacity of the English Imperial bushel,—its subdivisions, too, coincide (as a coincidence let it be assumed) in all material respects with the sub-divisions of the English bushel.

16. We seem bound, therefore, to decide unanimously that whatever system is introduced, that system should not only be uniform, but compulsory, to be of any real or practical

cal advantage. Such uniformity will, we believe, be most effectually maintained by the general introduction of the English bushel as the standard measure of capacity for British Burmah, and we hope in time for British India.

17. Its introduction will alike protect the Native and European dealer; confusion and uncertainty, on the score of novelty, will be partly obviated from the circumstance that no appreciable change will in reality take place in the actual capacity of the measure already in use in British Burmah, beyond the rendering of that measure uniform and compulsory.

18. The ulterior advantages of such uniformity present themselves at once in the facility which will be given to our dealings with the States adjoining British Burmah, in which the royal basket of Ava (the English bushel) is nominally at least recognised, and with which we are so confessedly allied in our commercial dealings. In proposing, as we now do, the general adoption of the English bushel as the standard compulsory measure of capacity for British Burmah, we do not wish to lose sight of those prospective results (however remote) which may, in the progress of time, and the increasing rapidity of communication, necessitate one universal system of weights and measures throughout British India and the parent country.

2nd Question.—We are next asked to offer an opinion as to whether, if a standard measure of capacity is made compulsory by legal enactment, its operations shall be confined to our sea-port towns only, or to such places as the Chief Commissioner may be empowered under an Act of the Legislature to extend it.

19. The question is one of both political and commercial importance. We have brought before us, not only the interests of the wealthier and more advanced classes of our town and country populations, but are obliged to bear in mind at the same time the conditions and characteristics of many hundreds of villages, over which the influence of any one defined set of rules or system of trade has never been felt, and may consequently prove both novel and burdensome.

20. It may be very generally admitted that our chief supplies of grain for export purposes are derived or obtained by means of native agents, who are deputed by the merchants and traders of the larger sea-port towns to proceed into the interior and make advances to cultivators whilst yet the crops are standing. In some cases contracts are entered into for a certain supply, at a certain rate, within a given time.

21. The daily retail trade in grain for local consumption is small as compared with the supplies which are brought up to meet the demands of our export trade. If the sale of grain in the latter case can be regulated by a uniformity in the standard measure, by which the demand is supplied, we apprehend that protection in a corresponding degree will extend itself over the lower branches of the same trade, provided only that the uniform system is understood and can be rigidly enforced. In the attempt to enforce a compulsory system of measures, we are inclined to oppose anything having the semblance even of a mere partial introduction.

22. With the knowledge which our joint experience of the condition of our most distant villages has given us, we fail to see how even *their* interests would be injuriously affected by the extension to them after due notice of the standard measure uniformly with its introduction into our sea-port towns. Our reason for forming this opinion is that, if it is determined to adopt the English bushel as the new standard measure of capacity throughout British Burmah, in this case no very appreciable change in the present existing measure (as already remarked) will in reality take place, beyond the compulsory nature of the new system. Instead of injury, to which the hard-working cultivator is frequently exposed by fraud, deception, and uncertainty, he will, we think, reap the advantages of being able to make his bargains, and deliver his contract supplies under a test which will possess at least the merit of certainty and uniformity. We all of us know, and have heard, of contract sales of paddy brought from the interior in which the Burmah basket has been mentioned, or stipulated for, as the measure to be used on making delivery; but where, when delivery has been taken with this supposed basket, its dimensions have been made to exceed the original standard to such an extent as to entail, in large sales, serious consequences on the vendor. Whilst, therefore, we advocate without limit a compulsory standard measure of capacity for British Burmah, we wish it to be borne in mind that the success of the new system will depend as much upon the energy and ability of Government officials to make the system understood as on their promptitude and determination to enforce it.

23. If we are averse to half measures, it is only because we have confidence in the possibility and expediency of establishing whole or complete ones.

24. 3rd Question.—We may now pass on to consider the next question which suggests itself as a sequence to the anticipated adoption of one standard measure of capacity for the whole country.

The point for consideration is whether the law shall make it obligatory to sell paddy and all other grain by measure or by weight. At present the sale by measure universally prevails throughout these provinces, so that any change from measure to weight would revolutionise the present mode of all grain dealings or transactions. The only departure from the measure system as applied to grain that we can call to mind solely concerns our import trade

trade by sea. The import of grain by sea into British Burmah is limited to small supplies of Bengal grain (chenna), and Madras gram (kooltee), which arrive in country vessels from the other side of the Bay of Bengal. This grain arrives in bags, containing two maunds; other varieties of grain may in like manner be imported and received, and disposed of by weight, but the sum of the whole is infinitely small as compared with our export grain trade with foreign Europe and the United Kingdom, or our daily retail sales of grain in the country itself.

25. We cannot, therefore, conscientiously recommend any change in the present existing state of sale of grain measure in British Burmah, as opposed to sale by weight; and we do not consider that any compulsory or obligatory system is required by which to restrict the sale of grain either to weight or measure. It appears to us that any binding obligation in such matters might be made highly inconvenient, and involve a restriction and interference with trade incommensurate with any supposed benefits which the change might be expected to produce. We are of opinion that our merchants and traders may very consistently be allowed, in adapting themselves to the peculiarities or circumstances of each particular dealing or purchase of grain, to mutually arrange amongst themselves the conditions (including the question, whether by weight or measure) under which such sale should proceed.

26. In dissenting, therefore, to any compulsory change in substitution of the present existing plan of grain dealings by measure as opposed to weight, we are convinced that the instances in which there may arise any wish even to depart from the measure system, will be exceedingly rare. Accordingly any change for the mere consideration only, without definite object, of adapting our system in British Burmah, to that of any one of the systems prevailing in British India, or of meeting the requirements of other countries without a corresponding benefit to this country itself, is, we are bound to say, inexpedient and uncalled for.

27. We are thus led on gradually, and by a systematic plan, as it were, to consider the subject of weights as apart from measures, and to offer suggestions either in favour of retaining the Burmese viss of 100 tickals now in universal use throughout Burmah, or of substituting the Indian seer of 80 tolahs. We are not instructed in respect to any manifest advantage which the change may be designed to bring about, nor are we informed whether such a change is even desirable, beyond the assumption that uniformity of system is the desideratum aimed, obtainable only by the adoption in British Burmah, of such weights as would ensure conformity with the system in force in British India.

28. This reduces our inquiry to the simple practical question, whether an approximate uniformity will ever be established in a complete system of weights for British India by the adoption into British Burmah of the Madras seer of 80 tolahs? In the different Presidencies of India, and even in the Presidencies themselves, we are aware that various systems of weights prevail. In Bengal we have the bazar maund and the factory maund, both of which not only vary considerably in themselves, but differ from the Madras maund in a proportionately greater degree than the Madras seer does from the Burman viss.

29. If British India is bound to present a uniformity in weights capable of extension to its dependencies or more distant provinces, it would be admissible in theory to anticipate success from the introduction throughout Her Majesty's Eastern dominions of a similarity in weights and measures which would tend more effectually to identify and link the several parts in one common bond of commercial intercourse.

This incentive to uniformity has no real existence. It would be as easy, or perhaps far easier, to ask the whole of Europe to arrange its system of weights, so as to bring them into conformity with any one of the many nations of which it is comprised, as to expect that the Indian standard can be reduced to one uniform level throughout the whole of British India.

30. Our duty, however, as a local committee, is to deal with that portion of this momentous question which most intimately concerns the interests of British Burmah, and upon which we may, with a greater degree of certainty and safety, venture to offer opinions. The Burmese calculation by weight is essentially a decimal system. It is universally used in every little village throughout British Burmah and the whole Burmese territory. What would be the operation or effect of substituting a system (the Madras seer, for instance, or the Bengal bazar or factory maund) of confessedly less pretensions to merit on the one hand, or facility in practice on the other? We say unreservedly that a change to either of the numerous Indian systems would be accompanied by untold complexity and confusion. The Burman race, though untrammelled by caste prejudices, are strangely, and at the same time, naturally, bigoted to national customs. They are possibly the most impossible mathematicians in existence. They import foreigners (Pownas*), and allow them a kind

* Brahmins.

31. After many years of practical experience, Burmans, as a whole, even in British Burmah, fail to comprehend the divisional differences between their own tickal in silver, and the corresponding tolah of India (our rupee). For instance, the tickal contains, in Burmese arithmetic (allowing that there is such thing), ten "moos" of two annas each. Our tolah or

rupee contains *eight* "*moos*," still they designate our half rupee as *five* "*moos*," and the difficulty or error in the calculation hardly becomes apparent to them; when *six* moos are demanded (a very frequent one) as the price of any petty bazar commodity, and 10 annas is given. In fact, 10 annas is very often made to take the place of 12 annas. We all know, who have had any bazar intercourse with Burmans, the perplexing difficulties with which even this apparently easy and absurd calculation is fraught. It is hardly extravagant to remark, that it is the cause (and will continue to be so for years to come), of daily bazar bickerings and pice haggings between Indian and Burman petty dealers throughout the country.

32. To follow up, or attempt to solve, the maze of difficulties which would arise from any attempt to extend an altered system of weights, is almost beyond the scope of this report, and certainly beyond our ability. Difference of race, language and religion, must have a place in any argument or discussion upon such a question; and when we add, that all three may, more or less, be opposed to a change, not by reason of its novelty, but in consideration of the difficulties which it would entail upon the transactions of every-day life, we think we have said enough to lay the matter in a sufficiently detailed form before those who, in deciding elaborate question of one uniform system of weights and measures for the whole of British India, will have to deal with the varied reports of the several Presidencies and local Governments of India.

33. English weights, we presume, must always be recognised in all parts of Her Majesty's dominions in the East as a basis of account. Their introduction as the standard weight for British Burmah would be attended no doubt with the same complication and confusion (though not to a greater extent, we apprehend) than that of any one of the Indian systems.

34. It will generally be gleaned, therefore, from this report on the subject of weights and measures, that our committee are unanimous in recommending a compulsory standard measure of capacity, and that they advocate the adoption of the English bushel in its entirety for British Burmah in the place of the present Burmese basket; further, that they advise, on incontrovertible grounds, the retention of the present existing system of weights on account of its universality throughout British Burmah and the adjoining countries, upon which British Burmah relies for commercial support, and also because any change in the system would be fraught with difficulties of an almost impracticable character and extent.

35. It only remains for us to remark upon the plan by which the compulsory bushel measures may be most successfully introduced and practically enforced. In the first place, it will be essential, we consider, that not less than six months' notice be given of any anticipated change. This change should come into operation between the months of June and November of any particular year, the period when the grain trade is slack. It will thereby be less likely to affect or interfere with actual dealings so largely carried on during the rice season. Test bushel measures of the standard capacity, with the English subdivisions complete, might, we think in the first instance, be procured from England, and be freely and gratuitously distributed throughout the country. These measures should be made of some solid and durable material, which would defy all ordinary attempts at fraud. The magistrates of districts might superintend their issue, so as to ensure to all towns and villages under their charge every facility in completing the object of a uniform system.

We have, &c.

(signed) *G. Faithfull*, Major.
G. Bullock.
J. Black.
R. S. Edwards.
E. Fowle.
E. B. Sladen, Captain,
 Honorary Secretary.

PROCEEDINGS of a Committee assembled at Rangoon by order of Lieutenant Colonel *A. P. Phayre*, c.b., Chief Commissioner of British Burmah, to discuss the subject of a uniform system of Weights and Measures for British India.

PRESENT :

Major G. Faithfull	-	-	-	-	-	-	<i>President.</i>
G. Bullock, Esq.	-	-	-	-	-	-	} <i>Members.</i>
J. Black, Esq.	-	-	-	-	-	-	
E. Fowle, Esq.	-	-	-	-	-	-	
R. S. Edwards, Esq., and	-	-	-	-	-	-	
Captain E. B. Sladen	-	-	-	-	-	-	

The committee appoint Captain E. B. Sladen to be honorary secretary to record proceedings, and draw up final report.

READ Minute of the Chief Commissioner, dated Rangoon, 15th August 1864, together with Resolution of the Government of India (No. 3839), of 20th June 1864.

The

The committee determine to discuss and report separately on each subject in the order laid down in the Chief Commissioner's minute; and, at the conclusion of their sitting, to draw up a general report, embodying the several objects and reasons upon which their final decision on each point has been based.

QUESTIONS FOR DISCUSSION.

1st Question.—Whether, with reference to the position of British Burmah in its connection with other countries, it will be advantageous to establish the maund and seer of India?

Answer.—The committee are of unanimous opinion that the maund and seer cannot be established with any advantage in British Burmah.—*Vide Report.*

2nd Q.—Shall the royal basket of Ava be universally adopted?

A.—No. The committee are of opinion that there should be one uniform measure of capacity, and recommend that the English bushel, which approaches so near to the royal basket as to exhibit an almost unappreciable difference, should be universally adopted in British Burmah, and be styled the standard basket of British Burmah.

3rd Q.—Is it desirable to sell all grain by measure or by weight, and shall such sale by one or the other be made obligatory?

A.—The committee, having established one universal standard weight and measure, are of opinion that it will be generally advantageous to allow traders to purchase or sell by such standard weight or measure as most convenient to each particular case.

4th Q.—Is it desirable that the standard basket be made compulsory as the standard measure of capacity in the large seaport towns only, or throughout the whole of British Burmah?

A.—Compulsory throughout British Burmah.

5th Q.—Should we adopt the Indian seer of 80 tolahs, or retain the existing Burmese weights for all transactions?

A.—The committee think that the existing Burmese viss of 100—100 viss being equal to 365lbs. avoirdupois—should be held to be, and retained as, the standard weight for British Burmah, and universally adopted. They are of opinion that the English standard weight must be recognised in all seaport towns, or elsewhere, throughout British Burmah, as a basis of account, and used optionally to suit the convenience of parties.

6th Q.—What is recommended in order that trustworthy standards be sold or distributed throughout the whole country to the people, provided the tickal and basket measure are made legal standards?

A.—The committee recommend that a sufficient number of weights and measures be ordered to be made (the measure of sheet iron) for distribution throughout the country. They think that one or more sets of each standard weight or measure should be kept for inspection by the head native official of every town and village. They suggest that at least six months' notice should be given of any anticipated change; and that on no account should such change be introduced, excepting between 1st June and 1st November of any particular year.

The committee, having generally replied to the questions which have been put to them, think it advisable that a report upon the subject before them be drawn up as a means whereby their opinions may be more clearly expressed.

E. B. Sladen, Captain,
Honorary Secretary.
G. Faithfull, Major,
Deputy Commissioner.
R. S. Edwards,
Collector of Customs.

From Major *R. D. Ardagh*, Officiating Commissioner of the Arracan Division of British Burmah, to Major *H. Nelson Davies*, Secretary to the Chief Commissioner of British Burmah, Rangoon (No. 105); dated Akyab, 16th September 1864.

IN reply to your letter (No. 02701) of the 15th ultimo, I have the honour to report that, in accordance with the instructions contained therein, I formed a committee, composed of one civil servant (Mr. C. J. Brown, collector of customs), one merchant (Mr. E. Christien, of the firm of Burot, Gerher, and Company), and one engineer officer (Major J. F. Tennant, R.E.)

The committee elected Major Tennant to be its honorary secretary, and I have now received its final report, which I beg to submit in original.

The members of the committee recommend that the English bushel, which is nearly identical with the Burmese basket in size, should be adopted as the standard measure;

and that the standard weights should be the Bengal maund and seer, which are multiples of the standard coin (rupee or tolah).

They recommend that weights and measures should be tested, where required, by Government officers authorised to do so, in the same way that weights and measures can be tested on the payment of a small fee by Exchequer arrangements in England.

They do not consider that legislation should extend to the providing that grain should be sold exclusively by either weight or measure; but they consider that the use of the standard measures and weights be made compulsory, all others being abolished,—one year's time being allowed for their complete introduction in the principal seaport towns and cantonments.

If the legislative enactment is intended to include liquid as well as dry measures, the committee thinks the standard should be the imperial measure; and for linear measurement, the English yard and foot.

I concur generally with the recommendation of the committee; but in measures, besides the contents in cubic inches, it may probably be of advantage to declare the weight of their contents in water, and thereon to construct tables on ascertained data, by which a fair proportionate weight may be assigned to each description of grain, less than that which would allow of the purchaser to demand an abatement in price.

The substitution of weights calculated on that of the current silver coinage of the country it appears to me would not be attended with any difficulty. If considered objectionable, the tolah might still be retained as the standard unit, and the Burmese peiktha recognised as a weight of 140 tolahs, with its divisions into the half viss of 70, and quarter viss of 35 tolahs; but this is only recommended in case of the Chief Commissioner seeing cause for otherwise objecting to the introduction of the Bengal seer of 80 tolahs as the recognised weight of the country. With the above remarks, I beg to submit the committee's report, which I hope will be favourably received; I consider the question of such great local importance and interest that, in the absence of a public newspaper, I have taken on me to have printed 150 copies of the Governor General's resolution, the Chief Commissioner's minute, and the local committee's recommendation, so that the resident merchants and others here may be kept well informed of what is being done. I send you a dozen copies, as you may find it convenient to make use of them.

REPORT of a Committee appointed by Major *R. D. Ardagh*, Officiating Commissioner of the Arracan Division of British Burmah, under Instructions from the Chief Commissioner of British Burmah; dated Ackab, 12th September 1864.

The committee recommend that the standard of dry measure be the English bushel, containing 2218.192 cubic inches, or eight imperial gallons. The basket of Arracan would be the half bushel, and that of Pegu the bushel. The committee would suggest that the Legislature should deal only with the "bushel." The local term "basket" would be applied then in the one case to the bushel, and in the other to the half bushel. The mean of a considerable number of local baskets in Arracan has been found to be 1062.5 cubic inches, which is so close to the half bushel that the local trade would not be disturbed.

The committee deprecate any legislation as to whether grain shall be sold by weight or by measure.

As regards weight, the committee are of opinion that the Indian maund and seer, whose sub-divisions are founded on the weight of the standard coin, and readily verifiable by reference to that coin, offer great advantages. These denominations of weight are well known in Arracan ports, being constantly used.

The Burmese tickal is probably liable to change, and consequently the viss, dependent on it; and the committee think that, as far as the wants of this province (Arracan) are concerned, and probably as regards British Burmah generally, there would be no advantage in a standard of weight differing from that of British India. They are disposed to think that no greater inconvenience would arise in transactions between parties on different sides of the frontier from the Indian standard being in use in the British provinces, than from a standard viss, as long as the weights of Burmah are in any way uncertain.

As regards the supply of standard weights and measures, the committee are of opinion that it is impossible to make them for the whole country by Government agency. They recommend that certain Government officers, the more numerous the better, should be authorised to verify and authenticate any weights or measures brought to them for that purpose on payment of fees.

If any liquid measure is introduced into India, the Committee consider that it should be Imperial measure in all respects, and they would recommend that the English yard and foot be enforced.

The committee think that the use of standard weights and measures should be rendered compulsory, within one year after the passing of the Act, in all seaports, sudder towns of districts, cantonments, and in such other towns as may be appointed by the chief civil authority, who should have power to name a later period at which their use should be enforced in all bazars and shops in his jurisdiction.

In

In all contracts the weights and measures shall be understood to be standard weights and measures, and shall be so construed by the courts; all contracts specifying other units to be rejected.

The Committee would have willingly avoided any compulsory clauses, but it has become evident that, without some, there will be no change, and that the measure, as well as the price, will be a subject of discussion, thus introducing a most undesirable element into bazars. It is hoped that the gradual introduction of the system provided for above will prevent any material inconvenience from the change. As regards English weights, the Committee believe they are little used as such, except in transactions of Europeans with each other; and that the reasons for prohibiting the use of all other weights applies with equal force to these.

J. F. Tennant, Major, R.E.
C. E. Brown.
E. Christien.

— No. 23. —

MYSORE.

From *L. Bowring*, Esq., Commissioner of Mysore, to *E. C. Bayley*, Esq.,
 Secretary to the Government of India (No. 4420-50); dated Camp Anturgutta,
 Cudoor District, 28 December 1865.

IN reply to your letter, No. 3156, dated 25th October 1865, I have the honour to state, for the information of his Excellency the Viceroy and Governor General in Council, that my attention was attracted three years ago to the multifarious denominations of weights and measures in use in this province, and that some statistics were collected for me by Major J. Puckle, one of the Deputy Superintendents of this Commission.

2. It soon became apparent, however, that it would be useless to attempt any local or partial reform, and that no beneficial result could be looked for, unless the instruction for modifying the present weights and measures emanated directly from the Supreme Government, and were made applicable to all parts of India. But at the onset we are met with the difficulty that no uniformity has as yet been attained in England itself; and it does not seem advisable to build up a new system which may require to be constructed *de novo*, should it be thought necessary to assimilate Indian weights and measures with those adopted in England, and that such a course would be most advantageous to trade cannot be denied. I beg to enclose the last authentic report that I have seen on the subject, from which it would appear that it is still under the consideration of a Committee of the House of Commons.

3. No practical result would be gained by my submitting proposals for modifying existing weights and measures in Mysore; but, in order to afford the Government an insight into the bewildering details which now embarrass the question, I beg to enclose a copy of tables showing most of the varieties which prevail, accompanied by an able memorandum by Major J. Puckle.

4. The remarks made in this memorandum are worthy of perusal; but, as observed above, it is useless to attempt to modify local weights and measures which are peculiar to a particular province; as, however happy the solution may be for that part of the country, it is improbable that it would apply equally to other provinces. Hence it would appear that the Supreme Government alone can, with advantage, prescribe an authoritative table; and, as doing so will necessarily involve running counter to long-rooted customs, it is essential that the change should be as perfect as possible. I consider, therefore, that no change should be made till the English standards have been laid down by Parliament, which has hitherto only partially expressed an opinion on the subject.

5. I understand, moreover, that, although in France the decimal system has long been in force, people in the country still cling to weights and measures officially deemed obsolete; and if this be true it is only reasonable to infer that in a country like India, where prescription and usage have so much authority, the

natives will not relinquish their local weights and measures unless some immediate and evident advantage is apparent to them from adopting a new system authorised by Government.

6. Land measures are to a certain extent already in a transition state, as the revenue survey adopts the English acre, with a subdivision however of 40 koontas, which, however convenient, has no reference to the decimal system. The terms "kandy" and "koodoo" are universally used in Mysore, but are, I need not observe, unknown in Upper India. Even in these measurements there are two descriptions recognised by Government, one for irrigated, the other for unirrigated land; the former kind of kandy containing 10,000 square yards, and being equal to 2·066 acres; the latter containing 64,000 square yards, and being equal to 13·223 acres. There is a great variety of "sthul," or local measurements, as shown in the tables submitted. It is to be expected that the survey will extinguish all old land measurements, leaving only the acre and its subdivisions.

7. In regard to weights I have no doubt that, so long as the rupee remains the standard coin of the country, and is the equivalent of a tolah or 180 grains, this should be adopted as the unit, as its multiples would be easy. I found, however, on weighing rupees by tens and hundreds, that the average weight was only $179\frac{16}{100}$, though, of course, 180 grains would be assumed as the basis of calculation. The disadvantage which presents itself in assuming this groundwork is that the maund would be 25·714 lbs., which is not so good a multiple, for inter-communication or commercial matters, as the existing maund of 28 lbs., which is now used by the coffee planters of this province.

8. In reply to the immediate question put in your letter, I have the honour to state that no copy of Resolution, dated 20th June 1864, was sent to this office, and that no committee was consequently appointed. Much correspondence on the subject took place with the superintendents with reference to a circular issued by me in October 1862; but, as I have before observed, the attempts then made to revise existing discrepancies were not sufficiently encouraging to induce me to prosecute the measure at the time, it does not appear necessary that I should trouble the Government with the circular mentioned, and the replies received from the divisional officers.

SECTION (F).—ECONOMIC, SCIENCE, AND STATISTICS.

FRIDAY.

REPORT on the best means of providing for a uniformity of Weights and Measures, with reference to the interests of Science, by a Committee consisting of Lord Wrottesley; the Right Honourable C. B. Adderley; Sir W. Armstrong; the Astronomer Royal; S. Brown, Esq.; W. Ewart, Esq.; the Master of the Mint; Sir John Hay, Bart.; Professor Hennessy; J. Heywood, Esq.; Dr. Lee; Dr. Loane Levi; Professor Miller; Professor Rankine; Rev. Dr. Robinson; Colonel Sykes; W. Tite, Esq.; Professor Williamson; and F. Purdy, Esq.

For a uniformity of weights and measures, with reference to the interests of Science, the Committee recommend to the British Association the following Resolutions:—

1. That it is desirable, in the interests of science, to adopt a decimal system of weights and measures.

2. That in furtherance of this proposal, it is desirable, from its scientific capabilities, to adopt the metric system.

3. That as the weights and measures of this country are gradually undergoing a process of decimalization, it would be more advantageous, instead of drifting by degrees into a heterogeneous variety of systems, to change at once to a really convenient system.

4. That it be recommended to the Government, in all cases in which statistical documents issued by them relate to questions of international interest, to give the metric equivalents to English weights and measures.

5. That in communications respecting weights and measures, presented to foreign countries which have adopted the metric system, equivalents in the metric system be given for the ordinary English expressions for length, capacity, bulk, and weight.

6. That

6. That it be recommended to the authors of scientific communications, in all cases where the expenses of labour involved would not be too great, to give the metric equivalents of the weights and measures mentioned.

7. That the influence of the British Association would be beneficially exerted in obtaining from Paris an authorised set of metric weights and measures, to be placed in some public and frequented building in London.

8. That advantage will be derived from the recent publication of metric tables, by C. H. Dowling, c. E., in which British standard weights and measures are compared with those of the metric system. That treatises explaining the metric system, with diagrams, should be forthwith laid before the public. The works on arithmetic should contain metric tables of weights and measures, with suitable exercises on those tables; and that inspectors of schools should examine candidates for pupil teachers in the metric system.

9. On the subject of temperature, it is recommended that the authors of reports to be presented to the British Association relative to temperature, be requested to give the degrees of heat or cold according to both the centigrade and Fahrenheit's thermometers.

10. It is recommended that the scales of thermometers constructed for scientific purposes be divided both according to the centigrade and Fahrenheit scales; and that barometric scales be divided into fractions of the metre as well as into those of the foot and inch.

11 That a Committee on uniformity of weights and measures be re-appointed.

Prince Talleyrand, in 1790, distributed among the Members of the Constituent Assembly of France, a proposal founded upon the excessive diversity and confusion of the weights and measures then prevailing all over that country, for the reformation of the system, or rather for the foundation of a new system, upon the principle of a single and universal standard. A Committee of the Academy of Sciences, consisting of five of the most eminent mathematicians of Europe—Borda, Lagrange, Laplace, Monge, and Condorcet—were subsequently appointed, under a decree of the Constituent Assembly, to report upon the selection of a national standard; and the Committee proposed in their report that the ten-millionth part of a quarter of the meridian of Paris should be taken as the standard unit of linear measure. Delambre and Mechain were appointed to measure an arc of the meridian between Dunkirk and Barcelona. They commenced their labours at the most agitated period of the French Revolution. At every station of their progress in the field survey they were arrested by the suspicions and alarms of the people, who took them for spies or engineers of the invading enemies of France. The result was a very wonderful approximation to the true length, and one in the highest degree “creditable to the French astronomers and geometricians, who carried on their operations under every difficulty, and at the hazard of their lives, in the midst of the greatest political convulsion of modern times.” By means of the arc of the meridian measured between Dunkirk and Barcelona, and of the arc measured in Peru in 1736 by Bouguer and La Condamine, the length of the quarter of the meridian, or the distance from the pole to the equator, was calculated. This length was partitioned into ten millions of equal parts, and one of these parts was taken for the unit of length, and called a metre, from the Greek word *μέτρον* (a measure). If the arc of the meridian be calculated from the result of French researches, the metre itself is equal, in English measurement, to 39·37079 inches; and multiplying this length by 10,000,000, the length of the quadrant of the meridian, when converted into feet, will be 32,808,992 feet. Sir John Herschel estimates the length of the quadrant of the meridian at 32,813,000 feet; so that, according to his calculation, there is a difference between the French and the new estimate of the quadrant of 4,008 feet, and therefore the French length of the quadrant is $\frac{1}{8194}$ th too short, and the metre is $\frac{1}{208}$ th of an inch less than the length of the ten-millionth part of the quadrant. An error of $\frac{1}{208}$ th of an inch in the determination of the metre is more than counterbalanced by the extreme simplicity, symmetry, and convenience of the metric system. Professor Bessel observed, with respect to the metre, “that, in the measurement of a length between two points on the surface of the earth, there is no advantage at all in proving the relation of the measured distance to a quadrant of the meridian.” Professor Miller, of Cambridge, who quotes this remark, deems the error in the relation of the metre to the quadrant of the meridian to be of no consequence; and he mentions another slight error in the metric system, discovered by recent research, and relating to the density of water, which he gives in the following words of Bessel:—“The kilogramme (1,000 grammes) is not exactly the weight of a cubic decimetre of water. Many of the late weighings show that water at its maximum density has a different density from that which was assumed by the French philosophers who prepared the original standard of the kilogramme; but nobody wishes to alter the value of the gramme on that account.” M. Chevalier stated to the Committee of the House of Commons on weights and measures in 1862, that, in calculation, the metric system spares both time and labour, exactly as a good machine would do for spinning or weaving. The metric system is considered by Sir William Armstrong to be “the only one which has any chance of becoming universal.” Two important principles form the basis of the metric system (1), that the unit of linear measure, applied to matter in its three forms of extension, viz., length, breadth, and thickness, should be the standard of all measures of length, surface, and solidity; (2), that the cubic contents of the linear measure in distilled water, at a temperature of great contraction, should furnish at once the standard weight and measure of capacity. Scientific advisers were summoned to the counsels of King Louis-Phillipe on his accession to the French throne; and that monarch

has the credit of having enforced the metric system in France. The opposition to the metric system among the French had not arisen from the requirements of commerce; the Department of the Bridges and High Roads and the officials of the Naval Arsenal had, with the consent of the French Government, already adopted the metric system, and the new system came into general operation in 1840. The Department of Commerce in France superintends the proper observance of weights and measures. Standards made for the course of trade are very numerous.

"If you have been walking about Paris," says M. Chevalier, "you may have seen the metre in the streets, fixed in the wall of many a public building. It is made by public authority. Any buyer, who is afraid that he has been cheated, can go to some street at a short distance, and there he finds the measurement of the metre fixed by authority for the use of the people; besides he has a process more simple to know whether he has been dealt with fairly—he has his own metre in his pocket." Verifiers of weights and measures are appointed in every district (*arrondissement*) of France, and each verifier has his own set of these instruments. Measures are made very cheap in Paris; balances furnished with small weights may be purchased at a trifling expense; and in the larger weights the principal expense is in the metal. Gutch's *Literary and Scientific Register* for 1864 contains a useful comparison of metric and English measures, compiled by Mr. Warren de La Rue, in which the different quantities of the metric system are expressed in their English equivalents, and the value of several important English weights and measures is given in the terms of the metric system. Until comparative tables of the English and metric systems had been published, the labour of converting English weights and measures into the metric system was so excessive, that when communications to scientific societies were published in England, with merely British weights and measures, such papers were frequently not translated in foreign countries, and the labours of the English man of science were consequently not appreciated beyond the limits of Anglo-Saxon dominions. Practical inconvenience was felt during the negotiation of the Commercial Treaty between France and England, on account of the English inch not being at that time usually divided except into quarters and eighths. Mr. Ogilvie, Surveyor General of the Custom House in London, who assisted Mr. Cobden in the French Treaty, found the advantage of the minute subdivisions of French measures, such as the millimetre, which is one-third less than one-sixteenth of an inch, and is the one-thousandth part of the metre. French workmen are familiar with the millimetre as a unit of width, and as especially useful with reference to plates of iron or other materials. Duties had to be calculated for the Treaty on rolled iron, in cases where the work of rolling increased the value of the iron, and where a slight diminution of width was of great importance. Mr. J. Mumford, Master of the British School at Highgate, recommends decimals to be placed immediately after numeration in the ordinary arithmetic books, instead of being put after compound interest and other difficult rules. The children in schools, who usually follow the order of subjects in an arithmetic book, would thus learn decimals at an earlier period of their education. So much time is occupied in schools in committing to memory the various tables of English weights and measures, and in working examples of compound addition, subtraction, multiplication, and division, that Mr. James Yates is of opinion that a year would be saved in the education of boys if the metric system were to take the place of the existing tables of weights and measures in England.

The English workmen engaged in building trades, such as carpenters, masons, and bricklayers, Professor Donaldson considers to be generally very intelligent; and whatever would afford to them facility in calculation would be acceptable as soon as it had been explained to them.

In railway operations a civil engineer ascertains weight by computation of measure; he cannot take scales and beams, and weigh pieces of iron of 20 tons and upwards; he knows the specific gravity of the iron, and he ascertains by measurement the weight of a given quantity of that metal. The metric system aids in all calculations relating to specific gravity.

Mr. W. Crosley, C.E., stated to the Committee of the House of Commons on weights and measures, that he believes the decimal system is extending itself very much, especially for scientific purposes, and amongst professional men, "it is extending itself among them very considerably, without any law whatever."

Chemists, pursuing important researches, employ generally metric weights and measures. Thus, in the Royal Institution of Great Britain, in Albermarle-street, the operations of the laboratory are carried on with the aid of the metric system; and Dr. Frankland, one of the chemists of that Society, finds the metric weights and measures particularly valuable in his experimental investigations respecting gases. The gramme, with its multiples and minute subdivisions, is a popular weight with chemists.

In the practical business of a druggist the metric system of weights and measures if generally adopted, would, in the opinion of Mr. Squire, save a great deal of labour to the rising generation. In the metric system, Mr. Squires observes, as the divisions and multiplications are all by ten, the subject and the calculations would be much simplified.

A meeting held in June 1863, of the Pharmaceutical Society of Great Britain adopted a petition to the House of Commons, in which they recommended an assimilation of the weights and measures of all nations, as likely to "tend greatly to the convenience of pharmacists and the safety of the public."

The Pharmaceutical Society of Great Britain felt assured that a "very few years would familiarise

familiarise both prescribers and dispensers with the new weights and measures; and that the easy multiplication or division of them by the decimal system, universally applied, would afford such facilities of computation as to recommend it strongly to the adoption of medical men and chemists; and they are strengthened in this opinion by the invariable practice of English and all other analytical chemists already to state the results of their investigations in decimals."

Some metric measures and weights approach very nearly to corresponding English quantities; thus, in liquid measure, five litres are nearly equal to $1\frac{1}{10}$ gallon, or 1 gallon 0·402 of a quart. A half-kilogramme, or weight of 500 grammes, is equivalent to 1 lb. 1 oz. 10·191 drams avoirdupois. The following brief table by Mr. Samuel Brown, condenses the system of all the metric measures and weights into a small compass:—

SYSTEM OF METRIC MEASURES AND WEIGHTS.

	LENGTH.	SURFACE.	CAPACITY.	WEIGHT.
MULTIPLES.				
Myria - - -	10,000	- -	- -	10,000
Kilo - - -	1,000	- -	1,000	1,000
Hecto - - -	100	100	100	100
Deka - - -	10	- -	10	10
UNITS.				
Divisions.	<i>Metre.</i>	<i>Arc.</i>	<i>Litre.</i>	<i>Gramme.</i>
Deci " - - -	·1	- -	·1	·1
Centi - - -	·01	·01	·01	·01
Melli - - -	·001	- -	- -	·001

It will be observed that the multiples of the unit in each case are designated, in the metric system by Greek prefixes:—*Myria*, 10,000; *kilo*, or *chilio*, 1,000; *hecto*, or *hecato*, 100; *deka*, 10; whilst the divisions of the unit, in each case, are expressed by Latin prefixes:—*Deci*, $\frac{1}{10}$ th; *centi*, $\frac{1}{100}$ th; *milli*, $\frac{1}{1000}$ th. The English equivalents to the measures of length and capacity, and to the weights, according to the metric system, are thus given:—

METRIC MEASURES OF LENGTH WITH ENGLISH EQUIVALENTS.

METRIC NAMES.	ENGLISH EQUIVALENTS.			
	<i>Inches.</i>	<i>Ft.</i>	<i>In.</i>	<i>Yards.</i>
Millimetre (1-1000th) -	0·039			
Centimetre (1-100th) -	0·394			
Decimetre (1-10th) -	3·937			
1 Metre - - - -	39·371	3	3·371	1·094
Dekametre (10 metres) -	- -	32	9·708	10·936
Hectometre (100 metres) -	- -	- -	- -	109·363
Kilometre (1,000 metres) -	- -	- -	- -	1093·633

METRIC MEASURES OF CAPACITY WITH ENGLISH EQUIVALENTS.

METRIC NAMES.	ENGLISH EQUIVALENTS.		
	<i>Gill.</i>	<i>Quart.</i>	<i>Gals. Qts.</i>
Centilitre - - - -	0·070		
Déclilitre - - - -	0·704		
Litre - - - -	- -	0·886	
Dékalitre (10 litres) -	- -	- -	2 0·804
Hectolitre (100 litres) -	- -	- -	22 0·039

METRIC WEIGHTS WITH ENGLISH EQUIVALENTS.

METRIC NAMES.	AVOIRDUPOIS.					TROY.
	Cwts.	qrs.	Lbs.	Oz.	Drams.	Grains.
1 Décigramme (1-10th)	-	-	-	-	-	1·543
1 Gramme -	-	-	-	-	-	15·432
1 Dékagramme (10 grammes)	-	-	-	-	5·644	
1 Hectogramme (100 grammes)	-	-	-	3·527		
1 Kilogramme, or kilo (1,000 grammes)	-	-	2·205			
1 Myriagramme (10 kilos)	-	-	22·046			
1 Metric quintal (or 100 kilos)	1	3·874				
1 Metric tonne (1,000 kilos)	19	2·736				

Professor Chevalier, in his evidence before the Committee of the House of Commons on weights and measures, states his opinion that some objections may be made to the gramme as the unit of weight:—"It is very small; perhaps it would have been better to have taken the kilogramme, but such a change can be easily made. If you think our measure of weight is too small, in case you adopt the system, you may take the kilogramme (observes the Professor) for the unit." The metric system of weights and measures has been adopted, not only by France, but by Italy (except the portion under Pontifical Government), Spain, Portugal, Belgium, and Holland; it has been partially received in Switzerland, which adopts the half kilogramme as the pound. The majority of the States composing the "Zollverein," or Customs-League, in Germany, have expressed their approval of the metric system. The half-kilogramme has been introduced into all great mercantile operations in Austria. At the International Statistical Congress, held at Berlin, in September 1863, 33 nations of Europe and America were represented by statistical delegates, and the Congress agreed to the following fundamental resolution on weights and measures:—"The adoption of the same measure in international commerce is of the highest importance. The metric system appears to the Congress to be the most convenient of all the measures that could be recommended for international measures." A Commission of the Imperial Academy of Sciences in St. Petersburg has recommended that such alterations should be made in Russian weights and measures as would put them in conformity with the metric system of France. The Grand Duke Constantine, brother of the Emperor of Russia, is in favour of the metric system; and Dr. Kupffer, a delegate from the Russian Government, has declared that Russia would recommend the adoption of the pure metric system if Great Britain would take the lead. "We wish England," said Dr. Kupffer, "to take the lead. England is a country of prior civilisation. Let England do it, and we are sure to follow." In the new Belgian law on weights and measures, the units of the metric system have been extended by adopting the doubles of each unit, and of its multiples and subdivisions. The Belgians have also adopted the principle of having weights representing 50, 20, 5, 2, and 1; and they have followed a similar arrangement with regard to measures of length and measures of capacity. In Holland the law requires the use of the metric system in all things, except weighing medicines. The old Dutch names, such as "elle" and "palm" are preserved in the metric tables; the "elle" is the metre (3·2809 feet), and the "palm" the decimetre (or 3·937 inches.) A "kan" in Holland is the name for a litre or 1·760 pint. In weights, the "ons" is the Dutch name for a hectogramme, or 3·527 ounces; and a "pond" corresponds to the kilogramme (=2·205 lbs). In Spain the Government has purchased 600 sets of metric weights and measures, and it intends to buy more, so that it may supply each important town with standards for comparison. On the Spanish railways distances are measured by kilometres, and weights by kilogrammes. Tables are published containing the equivalents of the old Spanish weights and measures in metric quantities, and calculated in each case from 1 to 1,000. Official tables are published in Portugal, containing Portuguese measurements in metrical quantities, and *vice versâ*. Inspectors of schools, appointed by the General Superintendents of weights and measures, have inspected 2,720 public and private schools; and schools are established under the same superintendence to explain the new system. A great number of elementary works have been published in Portugal on metrical weights and measures, for the use of schools as well as for the public. In the United States of America a Committee has been appointed by Congress to consider the subject of metric weights and measures. The Confederate States of North America have also expressed a wish to introduce into their Republic the metric system of weights and measures; and the system has been adopted in Mexico, Chili, Peru, New Grenada, Bolivia, Venezuela, and French and Dutch Guiana. Mr. Samuel Brown, in his evidence in 1862, before the Committee of the House of Commons on weights and measures, states, that in 1859, of the total trade of Great Britain, including 79,405 vessels, there were 47,393 vessels going to or from countries using the kilogramme, or about 60 per cent. of the total number of vessels; and of 19,332,174 tons, there were 7,726,148 tons carried to or from countries using the kilogramme, or about 40 per cent. of the total tonnage.

tonnage. Postal arrangements between Great Britain and France are complicated by the French weight for letters being somewhat heavier than the English foreign weight. An English ounce weighs 28·349 grammes; and the quarter of an ounce, or English foreign weight, weighs 7·087 grammes. In France, the postal weight for single letters from England is 7·5 grammes; so that the French allow an excess of weight of ·443 of a gramme, or more than one-third of a gramme more than the English. If a letter be pre-paid by stamps, the advance is 4 *d.* in England for every quarter of an ounce, and 40 centimes in France for every weight of 7½ grammes. The Postal treaty between the two countries declares, that "no letter, of which the postage is paid by stamps, is to be treated as an insufficiently paid letter, unless the value of the stamps be less than the amount required for its payment according to the weight allowed, not only by the English, but by the French scale of weight, of which 7½ grammes is the unit." In practice, the postal officials in London weigh letters going to France, and paid by stamps, with French weights. Sir Rowland Hill informed the House of Commons Committee that if the pre-paid letter does not exceed the French allowance, no additional charge is levied; if it does exceed that allowance, it is marked as insufficiently paid. Local letters in France are charged by a scale similar to that of England. It begins at 15 grammes, then it advances to 30, then to 60, and then to 90 grammes, and so on. Ten grammes are equal to nearly one-third of an ounce, 15 grammes are a little more than half-an-ounce, an ounce being 28·349 grammes. The use of metric weights and measures has recently been legalised in Great Britain; and the Act on this subject has been passed in 1864, "for the promotion and extension of our internal as well as our foreign trade, and for the advancement of science." Mr. William Ewart, M.P., has ably conducted this measure through the House of Commons; Earl Fortescue has had the successful charge of it in the House of Lords; and the Bill has been also supported by the International Decimal Association, in whose labours Mr. James Yates has taken an active and leading part. The investigations of the Committee of the House of Commons on weights and measures in 1862, have assisted in forming an influential Parliamentary party in its favour. Various recommendations were made in 1862 by the House of Commons Committee, at the close of their Report, among which were the following:—"That a Department of weights and measures be established in connection with the Board of Trade. The metric system should form one of the subjects of examination in the competitive examinations of the Civil Service. The *gramme* should be used as a weight for foreign letters and books at the Post Office. The Committee of Council on Education should require the metric system to be taught (as may easily be done, by means of tables and diagrams) in all schools receiving grants of public money. The Committee further suggest that, in the public statistics of the country, quantities should be expressed in terms of the metric system in juxtaposition with those of our own, as suggested by the International Statistical Congress." It will be satisfactory to notice that in a Report in 1862, by Mr. James Ball, published by the British Association for the Advancement of Science, "On Thermometric Observations in the Alps," the temperatures are given according to the centigrade scale, the corresponding temperatures according to Fahrenheit being frequently added in brackets. Sometimes the observations in this Report merely record the fluctuations of the mercury in the centigrade thermometer. Observations may, in like manner, be easily registered both according to the English and French scales of temperature, and the fluctuations of the barometer may also be noted so as to be intelligible both in France and Great Britain. At the end of Mr. Dowling's "metric tables," a comparison of the scales of Fahrenheit's, the centigrade, and Réaumur's thermometers is given, as well as a comparison of the British and metric barometers—the latter containing the equivalents, from 27 inches to 30·98 inches, in linear inches and millimètres. Under the head of "chemistry," in the Matriculation Examination of the University of London, candidates are frequently asked, among other questions, to convert a given number of degrees Fahrenheit into the corresponding degrees of a Réaumur or a centigrade thermometer. Sir William Armstrong remarked, at Newcastle-upon-Tyne, in his address to the British Association in 1863, that our thermometric scale had been originally founded in error; he regarded it as most inconvenient in division, and advised that the centigrade scale should be recognised by the numerous men of science composing the British Association. The distinguished President of the British Association stated his regret that two standards of measure, so nearly alike as the English yard and the French metrie, should not be made absolutely identical. We in England, observed Sir William, have no alternative but to conform with France, if we desire general uniformity. He was convinced that the adoption of the decimal division of the French scale would be attended with great convenience both in science and commerce. He could speak from personal experience of the superiority of decimal measurement in all cases where accuracy is required in mechanical construction. In the Elswick Works, as well as in some other large establishments of the same description, the inch is adopted as the unit, and all fractional parts are expressed in decimals:—"No difficulty has been experienced in habituating the workmen to the use of this method, and it has greatly contributed to the precision of workmanship. The inch, however, is too small a unit, and it would be advantageous to substitute the metre, if general concurrence could be obtained."

From Major *J. Puckle*, Deputy Superintendent, Mysore Commission, to the Secretary to the Commissioner of Mysore, on Circuit; dated Ootacamund, 20 December 1865.

With reference to the accompanying memorandum by the Commissioner. I have the honour to submit a few observations on the subject of weights and measures therein alluded to, and to apologise for having detained the papers that were obligingly placed at my disposal, and which are herewith returned, for so long a time.

MEMORANDUM OF WEIGHTS AND MEASURES.

THE tables attached to this memorandum show the great variety that exists in the weights and measures in ordinary use, and the necessity for their simplification, or assimilation, to some recognised standard.

2. Though the people would realise that this would facilitate their commercial dealings, they are so averse to any change that co-operation is not to be expected; and it therefore only remains to institute such measures as will bring about the needed reform with the least possible interference with what now obtains.

3. *For Weights.*—The maund and seer are almost universally known, though the former varies generally from 24 lbs. to 29 lbs., while in Bengal it is 80 lbs. In Mysore the maund of 28 lbs. is used for coffee, though this is only nominally 28 lbs., the referible standard being 1,120 rajah rupees (now an obsolete coinage), or their supposed equivalent, viz. 1,097 Government rupees, which would be in excess of the real weight by more than eight rupees.

4. The fact is that there is no real standard of comparison; the weight of a seer (for instance) depending on a certain number of obsolete coinage, or their supposed equivalent in Government rupees, or else on the weight of the nine kinds of grain that are used to determine the size of a seer of capacity, hence no two measures or weights can ever be exactly the same.

5. The coffee maund of 28 lbs. is an aliquot part of an cwt.; and the seer, which is generally assumed to be 2 lbs., would, if fixed at that, be an aliquot part of a maund, and might be subdivided as far as necessary. Moreover, by using the maund and seer of exactly 28 lbs. and 2 lbs., the assimilation of the Indian to the English "weights" would be complete, and very little change in value or nomenclature is shown in the following table:—

PROPOSED TABLE OF WEIGHTS.

	English Equivalent.
180 Grains = 1 tolah	180 grains.
2·43 Tolahs = 1 pullum	1 ounce.
16 Pullums = 1 rati	1 pound.
2 Ratis = 1 seer	2 lbs.
14 Seers = 1 maund	28 lbs. or $\frac{1}{4}$ cwt.
4 Maunds = 1 bhàra	112 lbs. or 1 cwt.

6. *The Measures* need simplification and reduction to a recognised standard equally with the weights, as the existing kristnaraj seer or capacity is only to be determined by the ancient Nowdaniem standard, viz., by taking $9\frac{1}{2}$ rajah rupees weight of each of the following kinds of grain:—

1. Wheat.	4. Bullah.	7. Gingely seed.
2. Rice in husk.	5. Black gram.	8. Horse gram.
3. Pigeon pea.	6. Chenna.	9. Moong.

or in all, 84 rajah rupees weight of cereals, pulses, &c. This quantity, assumed to weigh 2 lbs., and on which the seer avoirdupois is based, fills a cylinder of a certain shape which, from many careful measurements, may be stated to contain, on an average, $71\frac{1}{2}$ cubic inches.

7. This is so near the capacity of the Imperial English quart that the seer might be fixed at that (or 69·3185 cubic inches); and the cutcha seer, which is a well known and favourite measure, be fixed at a quarter of the above, or 17·329625 cubic inches, which is as nearly as possible its present capacity. The assimilation to our English measures would thus be complete, while the whole nomenclature would be unaltered, the only difference being that the candy would contain five quarts less for one quart in one bushel (than it is now supposed to do); but then accuracy would be substituted for inaccuracy.

THE PROPOSED TABLE.

	English Equivalent.	Contents in Cubic Inches.
4 Chitaks - - = 1 cutcha, or pow seer	$\frac{1}{2}$ pint, or 2 gills	17·329625, or $17\frac{1}{2}$ nearly.
4 Chitaks, or pow seer = 1 kristnaraj seer	1 quart - - -	69·3185, or $69\frac{1}{2}$ „
8 Kristnaraj seer = 1 koodoo - -	2 gallons, or 1 peck -	554 $\frac{1}{2}$ nearly.
20 Koodoos - - = 1 candy - -	5 bushels - - -	11091 „

N.B.—Four koodoos would exactly equal one bushel (or capacity in cubic inches of 2,218 $\frac{1}{2}$ very nearly), and 32 koodoos (or 1·6 candy) one quarter or cubical capacity of 10 $\frac{1}{4}$ feet. These might be added to the table if thought necessary, or the first one only, when it would be interpolated between the two last items.

And these measures would answer for liquid as well as dry measurement.

8. The great variety that exists, even in villages in the same talook (as the accompaniments of this memorandum will show), is a serious hindrance to commerce, but this cannot be rectified until the Government lead the way by declaring some such alteration not only advisable but imperative; and by causing it to be known that, in all its dealings, especially in the Commisariat Department, no other than the new sirkari or kristnaraj standard would be recognised, and by ruling “that in the sale of articles, no receipt should be valid in law on which the statute weight or measure was not stated,” leaving the facilities that this reform would afford to commend itself by its gradual ramification from the more enlightened centres of trade, down eventually to the agricultural population.

9. The standards for “weights” should be of a uniform pattern, and those for “measures” should be of exactly uniform depth and diameter, for the proper cubical capacity; and the question of heaped and struck measure should be settled between the vender and purchaser; the Government meanwhile setting an example, by declaring that, in all its transactions, struck measures should only be used.

10. *Land Measure* is now entered in the accounts in English acres; but the difference in the dry and wet measurements still exists according to the Bijwaree system, where a certain measure of seed was supposed to sow a certain area of land (both measure and area being called by the same name), and by which the relative proportion of dry to wet area is as about six to one.

11. The “wet” koodoo is 500 square yards, and a candy 10,000 square yards; but by making a very slight alteration in the “*pylee*” viz., by reducing it from 31 $\frac{1}{2}$ square yards to 30 $\frac{1}{4}$ yards the “*mamool pylee*” would exactly correspond with the English *pole*, by which the assimilation to the English standard would be complete, while the whole nomenclature would be retained. This should be made applicable to every description of land without reference to the cultivation.

12. The following table shows the slight alteration required:—

	English Equivalent.
4 Square hâths (9 square feet) - - - = 1 square guz	1 square yard.
30 $\frac{1}{4}$ Square guz (instead of 31 $\frac{1}{2}$) - - - = 1 square pylee	1 square pole.
16 Pylees (or 484 square yards instead of 500) = 1 koodoo or square sankli.	1 square chain, or 1·10th of an acre.
20 Koodoos or square sanklis - - - = 1 candy	2 acres.

N.B.—Ten sanklis, or chains of 22 yards or 100 links [of 7·92 inches per link] in length and one in depth, measure one acre.

13. The above suggestions are, it is thought, adapted for Mysore, as the assimilation of existing weights and measures to the English standard would be complete with the retention generally of the old nomenclature and value, while the reform would be carried out with the minimum of interference with old-established customs and ideas, and a fixed systematic standard would be substituted for a variable one.

14. Should any such alterations be made, the term “sirkari,” or other definite name, should be given to prevent mistakes.

15. But should it be deemed advisable to introduce the decimal system, instead of the above, the following remarks may not be deemed out of place:—

16. The method of determining the capacity of a measure (seer) by liquid is not unknown—oil, milk, and ghee having been so used; the kutchia seer containing as nearly as possible 24 rajah rupees weight of oil. The kristnaraj seer contains 100 Government

rupees weight of water, which would form an excellent standard, based on the decimal application of the favourite tolah, which would be intelligible all over India; and the exact capacity in cubic inches would be determined by 100 rupees weight of distilled water, at a temperature to be agreed on, and with the barometer at the sea level.

17. The names suggestive of divisions by one-half, one-quarter, one-eighth, &c., as adha, chetak, alak, gidda sola, veesa, soliga, &c., should be abolished; and those indicating a decimal division, and still familiar to the Indian ear, should be adopted, as has been attempted in the following table, where the average capacity of the present kristnaraj seer has been taken at 71·3 cubic inches:—

TABLE OF MEASURES OF CAPACITY.

New Decimal Denomination.	Contents in English Cubic Inches.	Contents in Imperial Gallons.	French Equivalents.
10 Dassakas = 1 cutha seer - -	7·13	0·025714	1·16828 letre.
10 Kutcha seers = 1 kristnaraj seer -	71·3	0·25714	1·16828 deciletre.
10 Kristnaraj seer = 1 koodoo (instead of 8 seers, as at present).	713	2·5714	1·16828 hectoletre.
10 Koodoos = 1 palah - -	7,130	{ 257·14 or 32·12 bushels }	} 1·16828 kiloletre.
10 Palahs = 1 candy - -	71,300		

18. The weights based decimally on the rupee would be as under:

	English Grains.	English Pounds.	Government Rupees.
10 Spatakas (or cents. of a tolah) - = 1 dassaka or masha	18	-	0·1
10 Mashas - = 1 tolah - -	180	0·025714	1
10 Tolahs - = 1 dhadga - -	1800	0·25714	10
10 Dhadgas - = 1 seer - -	18000	2·5714	100
10 Seers - = 1 maund - -	180000	25·714	1000
10 Maunds - = 1 bharah - -	1800000	257·14	10000

By this the maund would be, as nearly as possible, the weight that it is commonly valued at, viz., 25 lbs.

19. *Land Measure.*—The cubit, according to the average of many trials, ranges from 19·6 to 19·7 English inches, and this accords well with the length assigned to it by the natives. If this were fixed at 19·68395, it would exactly correspond with the French half metre, and the guz of two cubits with the metre; and the Mysore wet candy, of 10,000 square yards, would be a synonym for a French hectare, or 2·473614 English acres. On this the following table has been calculated; the present nomenclature being retained as nearly as possible:—

TABLE FOR LAND MEASURE.

New Decimal Denomination.	Equivalents in English Square Yards.	French Equivalents.
10 Square hastas = 1 square kadam (sirkari).		
10 Kadams - = 1 " guz - -	1·196033	1 square metre.
10 Guz - = 1 " dhaza - -	11·96033	10 "
10 Dhazas - = 1 " sankli - -	119·6033	100 "
10 Sanklis - = 1 " koodoo - -	1196·033	1000 "
10 Koodoos - = 1 " candy - -	11960·33	10000, or 1 hectare; or 2·473614 Imperial acres.

N.B.—One hasta (linear) = 3·937079 English inches; and one square hasta, about 15½ square inches; and one square kadam, 155 square miles, nearly.

20. The first suggestions for the assimilation of the weights and measures to the English standard, though intended originally for Mysore, would admit of general application; as the kristnaraj seer of about 71 cubic inches, founded on the "Nowdaniem" standard, is known

known and used throughout Southern India and in Bengal; while the seer avoidupois has relation to the same seer of capacity, inasmuch as the *quantity* of grain determines the capacity of the latter, and its *weight* (84 rajah, or 2 lbs. English) the former. The reduction of the seer of capacity to 69·3184 cubic inches (or the English quarter), and the kutchra seer to 17·329625, which is very nearly what it now is, and the fixing of the seer and maund avoidupois at 2 lbs. and 28 lbs. respectively, would, without any serious innovation, establish a fixed systematic standard, which would be intelligible to all.

J. Puckle, Major,
Deputy Superintendent, Mysore Commission.

Ootacamund, 20 December 1865.

VARIETIES OF LAND MEASUREMENT, KOOSKEE OR DRY.

Name of Measurement.	Number of Seers for 400 Square Yards per Koodoo.	Square Yards per Koodoo.	Square Yards per Candy.	Local Area, Square Yards.	Equivalent per Candy, in Acres.	Where Prevalent, &c. &c.
Kristnaraj standard - - -	8	3,200	64,000	-	13·223	Present Government standard.
Madavaraya - - - -	-	17,280	345,600	-	-	In Seerah and part of Mudgiri. This is exactly four times the wet measurement.
Looboo - - - -	-	-	-	1,024	-	In Herioor, Ayammyalam, Matad, Cancoppa, and Devangeri. Wet and dry the same.
Ackadi - - - -	-	-	-	480	-	In Hosdroog, parts of Herioor, Devangeri, and Hurryhur Talooks. Wet and dry the same.
„ - - - -	-	-	-	750	-	In Hoshally Talook, and Hurryhur Proper.
Sairra - - - -	-	-	-	2,844½	-	In parts of Nugur.
Jungle koodoo - - -	-	-	-	1,000	-	Dry land reclaimed from jungle in Nugur.
„ - - - -	-	-	-	3,200	-	Former lot at four annas, the latter at six annas.
Pucka koodoo - - -	16	6,400	128,000	-	26·446	The koodoo equals one cawni, and is used in Coongul, Toomkoor, Cudab, Honavrialli, Chicknaickwhully, Toorvakeri, Cudoor, and Terrikerry.
Sthul koodoo, &c. - -	3	1,200	-	-	-	In Soorub.
„ - - - -	80	32,000	-	-	-	Shikarpoor and Mulcalmooroo.
„ - - - -	18	7,200	-	-	-	Homelly, Shimogah, and Terrikerry.
„ - - - -	3½	1,400	-	-	-	Luckmully and Chickmoogloor.
„ - - - -	2¼	900	-	-	-	Ditto and Wustara.
„ - - - -	27½	11,000	220,000	-	-	Luckmully.
„ - - - -	24	9,600	192,000	-	-	Terrikerry, and Turoor in Kortagiri.
„ - - - -	20	8,000	160,000	-	-	Terrikerry.
„ - - - -	2½	1,000	20,000	-	-	Wustara.
„ - - - -	64	25,600	512,000	-	-	Doderi, part of Powgur and Tulluc.
„ - - - -	96	38,400	-	-	-	Madavaraya.

N.B.—It will be observed that the number of seers of 400 square yards for dry cultivation varies from 2½ to 96 per koodoo; though eight for wet and dry is the Kristnaraj standard, making the koodoo 3,200 square yards, and the candy 64,000, or 13·223 acres.

In parts of Chittuldroog District there is a local measure (ackadi) used both for wet and dry land, of 480 square yards, which is only four yards less than the tenth of an acre.

In the Toomkoor and Cudab Districts the koodoo equals the Madras cawnie.

LAND MEASUREMENT, WEIGHT, AND BAGAYET.

MEASUREMENT.	Number of Seers per Koodoo of 62½ square yards.	Square Yards per Koodoo.	Square Yards per Candy.	Local Area, Square Yards.	Equivalent per Candy, in Acres.	Description.	REMARKS.
Kristnaraj standard - - -	8	500	10,000	-	2·066	both -	Government standard.
Sthul koodoo, &c. - - -	80	5,000	100,000	-	20·66	ditto -	Mulcalmooroo
Ditto - - - - -	24	1,500	30,000	-	-	wet -	Turoor in Kortagiri.
Madavaraya koodoo, &c. -	96	6,000	120,000	-	-	garden and wet.	Nidigul; Herioor; Mudgiri; Seerah; Madigasy; Chinnroy Droog, part of Kortagiri; and Mahakala Droog.
Madavaraya - - - - -	-	4,320	86,400	-	-	wet -	Seerah and part of Mudgiri.
Sthul koodoo, &c. - - -	-	750	-	-	-	garden	Mulberry garden, Coongul.
Ditto - - - - -	-	750	-	-	-	wet -	Boodyhal.
Ditto - - - - -	-	800	-	-	-	garden	Capillary bourie cultivation.
Pucka - - - - -	-	1,000	-	-	-	both -	Boodyhal, Cudab, Toorvakiri, Chicknaickwhully, Coongul, Honavally.
Sthul koodoo - - - - -	-	18,000	-	-	-	garden	Powgur.
Ditto - - - - -	-	12,000	-	-	-	-	Nidigul.
Ditto - - - - -	64	4,000	-	-	-	-	Tulluc, part of Powgur and Dodari.
Dhaya for soopari, cardamoms, pepper, betel, and coffee - - - - -	-	-	-	23½	-	-	Sangor and Soorub - } Square space between two trees.
- - - - -	-	-	-	18	-	-	of Anantapoor - }
- - - - -	-	-	-	26	-	-	Lucvully Proper, and Terrikerry.
- - - - -	-	-	-	25	-	-	Shimogah, Hala, Honore, and Honalli.
Bhurma - - - - -	-	-	-	-	-	-	Space between two rows, Nugur and Anantapoor.
Dhaya for soopari, cardamoms, pepper, betel, and coffee - - - - -	-	-	-	13½	-	-	Cowli Droog, Cuppa Gandanbully.
- - - - -	-	-	-	10½	-	-	Lucvully, Kaloo in Wastara.
- - - - -	-	-	-	4	-	-	Chickmoogloor (coffee).
- - - - -	-	-	-	100	-	-	Terrikerry, Cadoor (cocoa-nut).
- - - - -	-	-	-	144	-	-	In other Talooks (cocoa-nut).
- - - - -	-	-	-	480	-	both -	Cheengiri, Hosdroog.

N.B.—The kristnaraj standard is eight seers of 62½ square yards per koodoo, or 500 square yards. The candy is 10,000 square yards, or 2·066 acres. The local seer varies from eight to 96 per koodoo.

The dhaya is a local measurement varying according to the cultivation, and is intended generally to denote the square allotted to each plant; thus coffee trees are ordinarily planted six feet apart, which gives four square yards to each, and admits of rather more than 1,200 trees in the acre. Cocoa-nut trees have a dhaya of about 100 square yards, and areca nut trees about 10 square yards.

MEASURES OF CAPACITY.

PLACE AND NAME.	Cubic Inches per Seer.	Seers per Koodoo.	Seers per Candy.	Equivalent in Imperial Bushels per Candy.	REMARKS.
					N.B.—The measures for sale, for general use, and for seed, are often different in the same place.
Mudgiri Madavarow - - -	74	96	1,920	64	30 of these seers equal, very nearly, 1 bushel. 1 bushel = 2218·192 cubic inches. 30 seers = 2220 - ditto Same in colour.
Kristnaraj standard - - -	71·75	8	160	5·175	
Seringapatam (pucka) or Sultany.	74	16	320	10·66	
Ashtagram (ordinary) - -	74	14	280	9·33	All kinds of grain sold by this, but generally grain is sold at so much per 100 seers.
Sthul - - - - -	74	5	100	3·33	Used for wheat, raggi, rice, and salt.
Bangalore candy - - -	74	10	200	6·66	
Periapatam - - - - -	74	7	140	4·66	Ditto - - - ditto.
Huldipuru - - - - -	87½	-	-	-	Used by the farmers.
Ditto - - - - -	32½	-	-	-	Used by the merchants.
Hurryhur - - - - -	159½	80	1,600	115·2	The seer, or as it is called "chitty," is 159½ cubic inches, 4 chittys = 1 gydna.
Ditto - Cutcha seer of oil	16½	-	-	-	20 gydnas = 1 kolaga, 20 kolagas = 1 candy (1,600 cwts).
Kristnaraj standard assuming it to be 1 gallon of distilled water, at 60°, Bar. 30 = 10 lbs. - - -	71·75	8	160	5·175	1·035 quarts, Imperial = 1 seer, 71·75 cubic inches. 3·8617 seers = 1 gallon, 277·274 " " 8 seers = 1 koodoo, 574 " " 30·8936 seers = 1 bushel, 2218·192 " "
Rutnagiri Haldah - - -	-	80	1,600	-	160 seers, or 5·175 bushels = 1 candy, 114·80 cubic in.
Pucka - - - - -	-	64	1,280	-	In Mudgiri.
Cutcha Mysore seer - - -	17½	-	-	-	Ditto.
Mysore pucka - - - - -	71·75	10	200	6·4	This filled with water, at a temperature of 75° and Bar. 27°, weighs 23½ Government rupees, or 24 Rajah rupees, or 0·60428 lbs.
New Mysore, weighing 100 tolahs of water.	71·73	10	Seers per palah. 100	Seers per candy. 10·00	Nearly used very generally in the villages about here.

N.B.—The cutcha seer of Mysore is found, on the average of many trials, to contain 17½ cubic inches. If this were fixed at 17·329625, it would be exactly one-quarter of an English quart Imperial, and the kristnaraj seer might be fixed at the exact quart, or 69·3185 cubic inches. This could hardly be called an innovation, but rather determining a fixed and systematic standard for a variable one which, after the first distaste for change of any sort, would soon commend itself to the people.

WEIGHTS.

N.B.—One Sultany Rupee = '02518 lbs. One Company's Rupee = '025714 lbs. = 180 grains.

NAME AND PLACE.	Number of Government Rupees.	Number of Sultany Rupees per Seer.	Weight in pounds of one Seer.	Number of Seers per Maund.	Pounds per Maund.	Candy.	REMARKS.
Mudgiri Madavaraya -	-	22	0-554	48	26-61	-	
Seerah - - - -	-	22	- -	56	- -	-	For local sales.
Ditto - - - -	-	-	0-554	48	26-61	-	For exports, such as cocoa-nuts.
Seringapatam cutcha seer -	-	24	0-60428	40	24-17	-	For jaggery, sugar, tamarinds, betel, condiments, sandal wood, wool, silk, cotton, thread, rope, honey, wax, oil, and ghee.
							A seer of capacity of oil is the standard for the weight of this name.
Bangalore cutcha Periapatam and Mangalore.	-	24	- -	40	24-17	-	For ghee, walagram, betel, and black pepper.
Bangalore - - - -	-	24	- -	42	25-8	-	Nearly for wholesale for every article of weight except those brought from Seringapatam, but in retail the Seringapatam standard is used.
Ditto - - - -	-	24	- -	44	26-7	-	Very nearly. For cotton wool.
Colar cutcha, 21 dadas or dubs; these are a little heavier than rupees.	-	-	- -	48	25-5	-	
Colar seer - - - -	-	-	- -	52	27-6	-	Jaggery, sugar, tamarind, &c., sold by this gram usually sold at per 100 seers.
Mangalore - - - -	-	24	- -	46	28-14	-	Generally used in Mangalore bazar, and in quantity as above.
Ditto - - - -	-	24	- -	-	28-55	-	Used by merchants when they buy.
Huldipoor, Barcoor, and Honawur.	-	24	- -	40	24-17	-	Common bazar weight in Mysore territory.
Ditto ditto - - -	-	24	- -	42	25-5	-	Maund of pepper.
Ditto ditto - - -	-	24	- -	45½	27-9	-	" of betel-nut.
Ditto ditto - - -	-	24	- -	48	29-13	-	" of coccanut-kernel, kopra.
Ditto ditto - - -	-	24	- -	44	26-7	-	" of jaggery.
Hurryhur - - - -	-	24	- -	48	20-13	-	" of cotton.
Ditto Takady - - -	-	24	- -	36	21-8	-	" of farmer's weight.
Ditto Bazar - - -	-	24	- -	40	24-17	-	Maund of local bazar; 8 maunds = 1 bullock load; 20 maunds = 1 barah; 40 maunds = 1 bandy, or nearly 1,000 lbs.
Packa seer, Bangalore -	-	84	2-11512	-	- -	-	A kilogramme nearly, which is 2-20548 lbs. (849 rupees is 2-16).
Sandal sales - - -	-	28	0-705	40	28-2	-	Sandal wood sold by this.
Chicknaikenpully Walay Tooka.	-	27½	0-69245	40	27-7	-	This is a local weight, and is used for kopra and areca nuts; it was formerly 275 rajah rupees for one dodhe (10 seers); but as they are out of currency, 270 Government rupees have been arbitrarily fixed as the weight of a dushera, 10 seers = 1 dodhe, 4 dodheras = 1 maund, 8 maunds = 1 heroo, or bullock's weight or load.
N.B.—Stone weights are used; 1 charecka, nearly 7 lbs., used for areca, coffee, &c.							8 maunds = 1 heroo. 20 " = 1 bhara. 40 " = 1 bandy load, or more than 1,000 lbs. avor. 1 bandy load = 1,000 lbs., this for areca, kopra, &c.
Honavully Havay Tooka -	-	26	- -	40	- -	-	
Cutch seer (about) - -	23½	24	0-60428	40	24-17	403-4	
Bengal - - - -	-	-	- -	-	80	-	
Indian - - - -	-	-	- -	-	82½	-	Weight in Government rupees of one maund, 960.
Cuddapah, Masulipatam -	-	-	617136	40	24-685	-	1,045 for cotton.
Vizagapatam, Ganjam, Rajamundry.	-	-	- -	-	- -	-	
Bellary - - - -	-	-	- -	-	25-92	-	1,008.
Chingleput, North Arcot, Tanjore, Madura, Salem, Nellore, Guntoor.	-	-	- -	-	24-685	-	960.
South Arcot - - - -	25	-	- -	-	25-71	-	1,000.
Canara.	-	-	- -	-	- -	-	
Mangalore, Buntwal, &c. -	-	-	- -	-	28	-	1,089.
Bekul - - - -	-	-	- -	-	25-7	-	1,000.
Honore, Shedasheoghur -	-	-	- -	-	- -	-	1,120.
Coompta and Soonda -	-	-	- -	-	- -	-	1,152.
Soonah - - - -	-	-	- -	-	- -	-	1,272.
Bilghi - - - -	-	-	- -	-	- -	-	1,000 (hera pauch seer).
Ditto cutcha maund -	-	-	- -	-	- -	-	8,750 (and 20 of these to a candy).

N.B.—The Mangalore maund is very nearly 28 lbs. or ½ cwt., and coffee in Mysore is supposed to be weighed by the maund of 28 lbs. It would be found on trial that the weight of Nowdamam grains that would fill an English quart Imperial would balance almost exactly 2 lbs.

Goldsmith's weight 1-16 canteroy pagoda = 1 vessa, and so on by eighths to one pagoda. This is called vessa tooka, also 1½ canty fanams = 1 chowiy tooka, 5 canteroy fanams = 1 hormoo, 2 hormoos = 1 pagoda.

20 December 1865.

J. Puckle, Major,
Deputy Superintendent, Mysore Commission.

HYDERABAD.

From Sir *G. U. Yule*, C.B., and K.C.S.I., Resident at Hyderabad, to *E. C. Bayley*, Esq., Secretary to the Government of India, Simla (No. 29); dated 18th July 1866.

WITH reference to your letter, No. 3155, of the 25th October 1865, and Government Resolution, dated 20th June 1864, on the question of a uniform system of weights and measures for British India, I have the honour to submit, for the information of his Excellency the Viceroy and Governor General of India, copy of a letter from the Officiating Commissioner, Hyderabad Assigned Districts, No. 641, of the 5th July 1866, with enclosure on the subject, and to state that the only measure required to make the use of the new weights universal is to give power to seize and confiscate the old weights, and inflict some slight punishment on parties using them.

From Major *W. Nembhard*, Commissioner, Hyderabad Assigned Districts, to Major *J. Stubbs*, 1st Assistant Resident, Hyderabad (No. 641)—175; dated Ellichpore, 5th July 1866.

IN acknowledging the receipt of your letter, No. 2239, of the 18th December 1865, I have the honour to enclose an extract from the Administration Report of 1862-63, explaining what has been done regarding the introduction of a uniform system of weights and measures in the assigned districts.

2. The people use, to a considerable extent, the prescribed weights and measures; but, as there is no penalty for not using them, complete uniformity cannot be expected.

3. I beg strongly to recommend that the weights and measures adopted by Government should be made compulsory by law.

4. In the event of a general system of weights and measures being introduced for the whole of India, it would be applicable to the assigned districts, but, till this takes place, I think it would be a great benefit to the country were the use of the present weights and measures made compulsory.

EXTRACT from the Commissioner's Administration Report for 1862-63, dated 18th June 1863.

Section VIII.—Weights and Measures.

Para. 118. There had been the most utter confusion regarding weights and measures in Berar, and it was considered absolutely necessary to introduce uniformity. The weights adopted were the following:

1 tolah	= 180 grains.
5 tolahs	= 1 chittack.
16 chittacks	= 1 seer.
40 seers	= 1 maund.
20 maunds	= 1 candy.

119. These weights were adopted because they were those most commonly used in this and the adjoining provinces. Grain, however, is universally sold by measure and not by weight; and it became necessary, therefore, to establish a seer measure, which should contain, as nearly as possible, 80 tolahs weight of grain. As different species of grain are of different specific gravities, it was necessary to strike an average, as it would have been most inconvenient to have had a different measure for every different kind of grain; eight of the most common kinds were mixed in equal quantities, and the seer measure was made to contain 80 tolahs weight of the mixed grain. This measure was found to contain almost exactly a quantity of water weighing 100 tolahs. This test was, therefore, ordered to be applied to the seer measures, and it is a test which can be easily applied by any one.

120. No change has been made in the denominations of the weights, and all that has been done was to make a system of weights universal in Berar which was already in existence in many parts of it. Time and patience will of course be required thoroughly to introduce the new system, but the people show no aversion to it, and therefore the difficulties in the way of obtaining uniformity are not great.

Introduction of a new system of weights and measures.

Measures, how fixed.

Denomination of weights not altered.

— No. 25. —

From *Leoni Levi*, Esq., LL.D., Secretary to the Metric Committee of the British Association, to *E. H. Lushington*, Esq., Secretary to the Government of India, Financial Department; dated, 10, Farrar's Building, Temple, London, 20th June 1866.

I HAVE the honour to enclose two addresses on the subject of metric weights and measures, one signed by Earl Fortescue, President of the International Decimal Association, and one by Sir John Bowring, Chairman of the Metric Committee of the British Association, which I pray you to submit to the Government of India. The Act and Report of the Committee of the House of Commons on the subject are also forwarded to you this day by post. Any communication you may be so good as to send to either body or both, have the goodness to forward to myself.

To *E. H. Lushington*, Esq., Secretary to the Government of India, Financial Department; dated 10, Farrar's Building, Inner Temple, London, 19th June 1866.

I AM desired, by the Council of the International Decimal Association, to transmit to you, for the Government of India, a copy of an Act of Parliament passed in 1864, being the 27 & 28 Vict. c. 117, entitled "An Act to render permissive the use of Metric Weights and Measures in the United Kingdom." This Act was the result of a Parliamentary inquiry conducted in 1862 by a Committee of the House of Commons, which was appointed to consider "the practicability of adopting a single and uniform system of weights and measures with a view not only to the benefit of our internal trade, but to facilitate our trade and intercourse with foreign countries." A copy of that report I have also the honour to transmit. As you will see, the Committee came to the unanimous conclusion of recommending the introduction of the metric system in the United Kingdom as the only means for remedying the great inconvenience now experienced from the multitude of weights and measures in use.

Since the passing of this Act much has been done to promote the practical adoption of the new system; and we trust that, with an increased knowledge of the same throughout the country, the time will speedily come when a still more definite legislation may be safely introduced.

In bringing before you the steps taken in this country, we are anxious to call the attention of the Government of India to the great advantage of a uniform system of weights and measures throughout the British Empire, and to the great need of the co-operation of your Government, which exercises such paramount influence over the vast and populous territories of Asia, with a view to the attainment of so desirable an object. If we are rightly informed, moreover, the condition of India as regards its weights and measures is not better than that of this country. We understand that every village almost, certainly every talook throughout India, has measures differing in some respects from every other. In weights, the tola, the unit, is in one place 193 grains; in another 178; in another 209. The seer is in one place 41 tolas, in another 107, in another 24. The maund is in one place 42 lbs., in another 163 lbs., in another 24 lbs. In measures of length, the guz is in some places 44 inches, in other places 31 inches, and in others 27 and 34 inches. The cubit differs as extensively. On the multiplicity, confusion, and intricacy of Indian weights and measures several works have appeared, such as Dr. Francis Buchanan's "Journey from Madras," in 3 vols. 4to. (1807); Major Jervis's "Indian Weights and Measures, showing their equivalents in the metric system;" Mr. H. Bailey's "Suggestions for a uniform System of Weights and Measures throughout India," (1857); and lastly, and above all, a pamphlet on Indian weights and measures by Charles E. Gover, principal of the Military Male Orphan Asylum at Madras (1865), the result of careful study and extensive inquiries. It is, moreover, evident from these works that no progress whatever has been made towards unity in late years; and that, whilst the commerce and prosperity of India have advanced in

a wonderful manner, the weights and measures of the country exhibit the same disorder and confusion now as they did 60 years ago.

From the experience of this and other countries, we are sure that such a state of things must produce great inconvenience, trouble and uncertainty in trade, and greatly hinder social intercourse between the different provinces. The Council of the International Decimal Association are pleased to learn that the Government of India has already given its attention to the question as one requiring an immediate remedy; but we would submit that this is a favourable time, when new legislation is required in other directions, for introducing a sound and permanent reform aiming at conformity with the weights and measures of other countries.

It is quite unnecessary for us to recall the attention of your Government to the fact that, under similar circumstances, and after many efforts for obtaining a natural standard, the scientific men of France resolved upon adopting the metre, or a definite portion of the arc of the meridian, as the unit of both measures and weights, with a decimal system of divisions and multiples, and a special nomenclature at once simple and significative of the respective quantities. This system, ever since its introduction, has made steady advance towards universal adoption; and wherever any change has been made, as in Spain, Portugal, Italy, Greece, Belgium, South America, &c., &c., the metric system is the only system chosen; and, when once chosen and put in practice, it has never been abandoned.

The desire of uniformity in these great instruments of international intercourse has been expressed on many occasions of a public character, such as the International Exhibitions of 1851, 1855, and 1862; the International Statistical Congress held at Brussels, Paris, Vienna, London, and Berlin; and, during the forthcoming Universal Exhibition in Paris, we trust a special exhibition will take place of the standard weights and measures of all countries, with a view to the universal adoption of the metric system.

From this distance the Council of the International Decimal Association do not venture to suggest to your Government any specific measures. Yet they would respectfully submit that the claims of the metric system, as a basis for the weights and measures of India, should be properly considered; and that, having regard to its many advantages, it would be desirable to legalise the same throughout the Indian Empire, in the same manner as in the United Kingdom, and especially to promote the teaching of the same in all public schools. The rapid increase of the direct commerce of India with countries using the metric system renders such a measure highly necessary; and the Council trusts sufficient reasons have been shown for recommending to the Government of India a measure likely to bring that great empire within the network of countries and states throughout the world having one uniform system of measures, weights, and coins.

(signed) *Fortescue*, President.
Leone Levi, LL.D., Secretary.

To *E. H. Lushington*, Esq., Secretary to the Government of India, Financial Department; dated 10, Farrar's Building, Temple, London, 19th June 1866.

WE are desired by the Metric Committee of the British Association for the Advancement of Science, to transmit to you, for the Government of India, copy of an Act of Parliament passed in 1864, being the 27 & 28 Vict. c. 117—"An Act to render permissive the use of Metric Weights and Measures in the United Kingdom." This Act was the result of a Parliamentary inquiry instituted in 1862 by a Committee of the House of Commons, appointed to consider "the practicability of adopting a single and uniform system of weights and measures, with a view not only to the benefit of our internal trade, but to facilitate our trade and intercourse with foreign countries." Copy of their Report we have also the honour to transmit; and, as you will see, the Committee came to the unanimous conclusion of recommending the introduction of the metric system in the United Kingdom as the only means for remedying the great inconvenience now experienced from the multitude of weights and measures in use.

Since the passing of this Act much has been done to promote the practical adoption of the new system; and we trust that, with an increased knowledge of the

the

the same throughout the country, the time will speedily come when a still more definite legislation may be safely introduced.

In bringing before you the steps taken in this country on the subject, we are anxious to call the attention of the Government of India to the great advantage of a uniform system of weights and measures over all the British Empire, and to the great need of the co-operation of your Government, which exercises such paramount influence over the vast and populous territories of Asia, with a view to the attainment of the still further object of uniformity in the weights and measures of all countries. If we are rightly informed, moreover, the condition of India, as regards its weights and measures, is not much better than that of this country. We understand that every village almost, certainly every talook throughout India, has measures differing in some respects from every other. In weights, the tola, the unit, is in one place 193 grains; in another 178; in another 209. The seer is in one place 41 tolas, in another 107, in another 24. The maund is in one place 42 lbs, in another 163 lbs., in another 24 lbs. In measures of length the guz is in some places 44 inches, in other places 31 inches, and in others 27 and 34 inches. The cubit differs as extensively.

On the multiplicity, confusion and intricacy of Indian weights and measures several works have appeared from time to time, such as Francis Buchanan's, M. D., F. R. S., *Journey from Madras* (1807); Kelly's *Universal Cambist* (1811); Major Jervis's *Indian Weights and Measures*; W. H. Bailey's *Suggestions for a uniform System of Weights and Measures throughout India* (1857); Frederick Noback Masse at Gewitche, 1862; and lastly a pamphlet on *Indian Weights and Measures* by Charles E. Gover, Principal of the Military Male Orphan Asylum, Madras, the result of careful study and extensive inquiries. It is evident from these works that no progress whatever has been made towards unity in late years; and that, whilst the commerce and prosperity of India have advanced in a wonderful manner, the weights and measures of the country exhibit the same disorder and confusion now as they did 50 years ago.

From the experience of this and other countries, we are sure that such a state of things must produce great inconvenience, trouble and uncertainty in trade, and greatly hinder social intercourse between the different provinces. The metric committee of the British Association are pleased to learn that the Government of India has already given its attention to the question as one requiring an immediate remedy; but we would submit that this is a favourable time, when new legislation is required, for introducing a sound and permanent reform, aiming also to uniformity with the weights and measures of other countries.

It is quite unnecessary for us to recall the attention of your Government to the fact that, under similar circumstances, and after many efforts for obtaining a natural standard, the scientific men of France resolved upon adopting the metre, or a definite portion of the arc of the meridian, as the unit of both measures and weights, with a decimal system of divisions and multiples, and a special nomenclature at once simple and significative of the respective quantities. This system, ever since its introduction, has made steady advances towards universal adoption; and wherever any change has been made, as in Spain, Portugal, Italy, Greece, South America, &c. &c., the metric is the only one which has been adopted, since it does meet all the requirements of commerce. The desire of uniformity in these great instruments of international intercourse has been expressed on many occasions of a public character, such as the International Exhibitions of 1851, 1855, and 1862; the International Statistical Congress held at Brussels, Paris, Vienna, London and Berlin; and, during the forthcoming Universal Exhibition in Paris, we trust a special exhibition will take place of the standard weights and measures of all countries, with a view to the universal adoption of the metric system.

From this distance the metric committee of the British Association do not venture to suggest to your Government any specific measures, yet they would respectfully submit that the claims of the metric system, as a basis for the weights and measures of India, should be properly considered; and that, having regard to its many advantages, it would be desirable to legalise the same throughout the Indian Empire in the same manner as in the United Kingdom, and especially to promote the teaching of the same in all public schools. The rapid increase of the direct commerce of India with countries using the metric

system renders such a measure highly necessary; and we trust we have shown sufficient reasons for urging on the Government of India a measure likely to bring that great empire within the net work of countries and States throughout the world having one uniform system of measures, weights, and coins.

(signed) *John Bowring*, A. F. R. S., LL. D.,
Chairman of the Committee.
Leone Levi, LL. D., Secretary.

OFFICE MEMORANDUM, Financial Department (No. 1874); dated Simla,
9 August 1866.

TRANSFERRED to the Home Department.

By order, &c.
(signed) *J. E. Cooke*,
Assistant Secretary to the Government of India,
Financial Department.

— No. 26. —

MEMORANDUM.

HAVING had my attention drawn of late years to the necessity of reforming our system of weights and measures, and especially so by natives of India, I have perused the papers on the subject that are in the Home Office, and am of opinion that reform is called for, and not attended with any great difficulties. In submitting this memorandum, and a draft Act that I have drawn up for the consideration of his Excellency the Governor General in Council, I beg to express my willingness to take charge of the introduction of the Bill, if its general principles be approved.

2. The papers clearly show that the want of a uniform system of weights and measures throughout India has long been felt as an evil scarcely tolerable, and that it would have been remedied ere now had it not been for the difficulty of deciding what scale was the best to adopt. The decision of this point was rendered more difficult from the uncertainty whether the decimal system would be introduced into England. There is little prospect of this being done now, and, in the meantime, the whole retail trade of India suffers from the disgraceful cheating that the unrestricted use of many various scales gives room for.

3. The remedy divides itself into two main points for consideration.—(1), the selection of a scale; (2), the measures necessary to introduce the scale into common use.

4. As regards the selection of the scale, most of the plans proposed strove to combine three points,—

- (1).—The adoption of the English pound avoirdupois as a unit.
- (2).—The decimal system.
- (3).—The retention of some of the Indian weights and measures in conjunction with the English pound.

5. The decimal system is practically abandoned in England, and is not so necessary in India, where the people have always been accustomed to count by “fours” rather than by “tens.”

6. The retention of the present terms, seer, maund, or any attempt to assimilate our standard weights to them, or to refer to them in any way, is undesirable, as being certain to lead to confusion, if not to increase that now existing.

7. It seems better to adopt an entirely new scale, with new nomenclature, and none is so unobjectionable as the Imperial avoirdupois scale of England, which

which combines the multiples of 12 and 16, and the pound avoirdupois should be the unit of weight.

8. The unit of capacity should be the gallon, a measure containing a certain weight of pure water, and the scale should ascend and descend in multiples and sub-multiples of the unit. It is not necessary to adopt the numerous measures of capacity used in the English scale, as no such measures are now used in India or apparently required; the seer and its multiples and sub-multiples being the only measures used. The "gallon scale" will also serve, as does the "seer scale" now in use, for both liquid and solid capacities.

9. The English yard should be the unit of length.

10. The first part of the draft Act declares the Indian weights and measures, and provides for the custody of special standards in the mints at Calcutta, Madras, and Bombay, and ordinary standards at Collectors' cutcherries and other places throughout the country. The special standards in the mints will not, of course, be of much practical use, but the formality will give importance to the measure. The other standards will be available for constant use and reference.

11. The second part is the most important. It is useless to declare scales of weights and measures unless these are used, and they will never be used generally without a certain amount of compulsion. The class who must be compelled to use them are the small shopkeepers who sell the necessities of life. When this is done the rest will follow. It is proposed, therefore, to insist gradually on the use by all such retail dealers of the new scales, and it will be for the Executive Governments to see that every facility is given for their supplying themselves with any weights and measures they require at the lowest possible price. The change to the new system must, though gradual, be as complete as possible, and retail dealers must therefore be absolutely prohibited from possessing or using any other weights or measures. But there are cases where retail dealers, such as druggists, &c., may be in the habit of selling other articles besides the necessities of life, and for which other special scales are commonly used, and for such persons a special license will be given on application and on certain conditions. The adoption of the new scales will also be enforced on all public companies.

12. Legislation cannot go farther than this point; it must be left for local and municipal rules to reach those who do not come under the head of retail shopkeepers, such as country people who come in to sell at markets or bazars, and for this, provision is made in the Bill.

13. The Act must be supplemented by an alteration in all existing Acts where measures of weight or capacity or length, other than the "Indian measures," are made use of. The Acts relating to customs, salt, and opium will be those most affected. These alterations will doubtless be carried out by the various Legislatures concerned.

14. It will also be necessary to instruct all public officers and municipal bodies to make use of the "Indian weights and measures," so far as practicable, in all transactions in which they are concerned in their public capacity.

15. Proposals have been made for fixing a uniform scale of superficial area for the whole of India, but this does not seem to me so practically necessary as the other scales, though it may be desirable as affording a standard of comparison as regards statistics of land revenue. Land is not bought and sold by retail, nor does it form the subject of sale between persons of different Presidencies. The adoption of a uniform unit of area throughout India, though very desirable, does not seem so necessary as to justify the alteration of the land settlements which it would entail.

16. I do not put forth this scheme as showing either originality or completeness, but it is simple, and will, I think, be effective; and it is certainly desirable that some proposal should be placed before the public with the object of eliciting opinions that may lead to a final settlement of this question. It may be doubted whether, as we are going to have an entire abandonment of existing weights and measures, it would not be better to adopt the decimal

scales at once, instead of the old English scales which have been declared so inferior to the decimal system. For my own part, I think that assimilation to English scales, whatever they may be, is a point of greater importance than the adoption of a decimal system. The publication of this Bill will probably elicit valuable opinions on this point; but whatever scales be adopted, it seems to be most desirable that no time should be lost in declaring them, and that the plan of introduction sketched out in the second part of the draft Act, or some similar plan, should be adopted.

7 February 1867.

(signed) *M. J. Shaw Stewart.*

WHEREAS it is desirable to fix a uniform scale of weights and measures for India, and to make special provision for the adoption of that scale for the retail sale of the ordinary necessities of life; It is enacted as follows :—

I. This Act may be cited as “The Indian Weights and Measures Act of 1868,” and shall consist of two Parts. The first Part shall take effect from the time of passing the Act, and the second Part shall take effect in the manner prescribed in Section IX., and not otherwise.

II. In this Act the following words shall have the meanings set opposite them, unless there be anything in the context repugnant :—

Indian weights and measures shall mean the weights and measures described in Sections III., IV., and V. of this Act.

Retail dealer shall mean every person who keeps a shop and sells by retail any or all of the articles described in Schedule (A.) of this Act.

Local Government shall include every Chief Commissioner, or other officer whom the Government of India shall authorise to exercise the powers of a Local Government for the purposes of this Act.

PART I.

III. From the time of passing this Act the Indian measures of weight shall be the same as the Imperial avoirdupois weights of England, that is to say :—

16 drams to the ounce.	28 pounds to the quarter.
16 ounces to the pound.	112 pounds to the hundred weight.
14 pounds to the stone.	20 hundred weights to the ton.

IV. From the time of passing this Act the Indian measure of capacity shall be the gallon and its multiples and sub-multiples; the gallon shall be a cylindrical measure, the contents of which when filled with pure water shall weigh exactly pounds avoirdupois.

V. From the time of passing this Act the Indian measure of length shall be the Imperial yard of 3 feet or 36 inches.

VI. A standard Indian pound, and seer, and yard, shall be kept in the mints of Calcutta, Bombay, and Madras, under the custody of the mint masters, in boxes, with three secure locks, the keys of which shall be retained by the chief or senior secretary to the Governments of Bengal, Madras, and Bombay respectively, and by the chief municipal commissioners of those towns, and by the mint masters; and these boxes shall not be opened, except by the order of the Government of India, or Local Government.

VII. Standard Indian weights and measures shall be kept by all Collectors of land revenue, or officers exercising the powers of a Collector, and by such other officers as the Local Government may direct. These standards shall be examined and verified at least once in every period of 10 years, under such rules as may, from time to time, be issued by the Government of India.

VIII. The officers in charge of Indian weights and measures mentioned in Section VII., shall receive any weights and measures that may be brought to them for examination, and shall examine them, and, if correct, shall impress on them a stamp, and return them. A fee of 6 pies shall be levied for each weight or measure so stamped. It shall also be lawful for the said officers to keep, or cause to be kept, correct and duly stamped weights and measures for sale to any person at a price not exceeding their cost and the stamping fee.

PART II.

IX. From the 1st day of January 18 , the provisions of this second Part shall take effect within the towns of Calcutta, Madras, and Bombay, and in all towns containing an estimated population of not less than 5,000 persons to which the Local Government may extend it, and in all railway stations and military cantonments, and from and after the 1st day of January 18 throughout the whole of British India.

X. It shall not be lawful for any person to sell, by retail, any of the articles specified in Schedule (A.) by any weights and measures other than the Indian weights and measures prescribed by this Act.

XI. Any retail dealer who shall use, or have in his possession, any other weights and measures than Indian weights and measures, except under special licenses granted in accordance with Section XII. of this Act, shall be liable for a first offence to a fine not exceeding 10 rupees for each weight and measure so had or used, and for a second and any subsequent offence to a fine not exceeding 50 rupees for each weight and measure so had or used; and all weights and measures that have formed the subject of conviction under this section shall be destroyed.

XII. Any retail dealer who sells by retail any article other than those specified in Schedule (A.) of this Act, for the retail sale of which a special scale of weights and measures is commonly used, may apply for a special license to have and use such weights and measures, for the articles other than those specified in Schedule (A.) Such application shall be made to any of the officers in charge of the standard Indian weights and measures mentioned in Section VII., and shall specify the number, names, and presumed weight, capacity or length of the weights and measures presented for examination. The weights and measures shall be examined, and, if found correct, shall be returned with a license in the Form (B.), which shall be in force for a period not longer than five years. A fee of four annas shall be levied for each weight or measure stamped under this section.

XIII. Any person who shall have received a license under the last section, to have and use for certain articles special weights and measures, and shall use such special weights and measures for the retail sale of any of the articles specified in Schedule (A.) of this Act, shall be considered to have used such weights or measures fraudulently, and to have committed the offence described in Section 265 of the Indian Penal Code.

XIV. In towns and places where there are periodical bazars, markets, or fairs, it shall be the duty of the Municipal Commissioners, or (if there are no Municipal Commissioners) of the magistrate of the district, to make rules for the guidance of all persons attending such market or fair, with the object of ensuring the use of Indian weights and measures in the retail sale of all the articles included in Schedule (A.) of this Act; and such rules, when approved by the Local Government, shall have the same force as any other orders issued by the Municipal Commissioners, or magistrate of the district.

XV. Indian weights and measures, and no others, shall be used at all railway stations by the servants of the railway company; and any railway company that shall have or use any weights or measures other than the Indian weights and measures, shall be liable to a fine of 50 rupees for each weight or measure so had or used, and all such weights and measures, or instruments used as such, shall be confiscated.

XVI. Every police officer, or other person when empowered by warrant from a magistrate, or any two Municipal Commissioners, and every police officer in charge of a station without warrant, may enter any shop or premises for the purpose of inspecting or searching for any weight or measure kept or used therein, whenever there is reason to believe that there are in such shop or premises any weights or measures kept or used in opposition to the provisions of this Act. Any such weights or measures may be seized, and information given to the nearest magistrate.

XVII. All offences under this Act (except those described in Section XIII.) may be tried by any magistrate under the provisions of the Code of Criminal Procedure.

SCHEDULE (A).

Grains and seeds of all kinds when sold by weight or capacity.	Sweetmeats.
Bread and biscuit of all kinds.	Brass and copper vessels, when sold by weight.
Butcher's meat (beef or mutton).	Cloth, when sold by length.
Tobacco in leaf.	Ghee.
Salt.	Oil.
Sugar.	

SCHEDULE (B).

Name of Applicant and Residence.	Names of Weights or Measures specially Licensed.	Equivalent in Indian Weight and Measure, of each Weight or Measure specially Licensed.	Purpose for which each Weight and Measure specially Licensed is to be Used.	Period for which this License is to Run.

COPY of the REPORT from the COMMITTEE of
WEIGHTS and MEASURES to the SECRETARY to
the GOVERNMENT of BENGAL, dated 25 July
1866; with other PAPERS on the same subject.

(*Mr. John Benjamin Smith.*)

Ordered, by The House of Commons, to be Printed,
29 November 1867.

[*Price 1s.*]

16.

Under 12 oz.

RANGOON AND WESTERN CHINA.

RETURN to an Address of the Honourable The House of Commons,
dated 12 August 1867;—for,

“COPY of all MEMORIALS, and of LETTERS transmitting them, to the First Lord of the Treasury or other Minister, subsequent to the 7th day of December 1863, on the subject of opening up a direct COMMERCE with the *Shan States* and *West of China*, from the Port of *Rangoon*; and of the REPLIES thereto (in continuation of Parliamentary Paper, No. 5, of Session 1864).”

India Office, }
2 December 1867.

J. R. MELVILLE,
Assistant Secretary, Political Department.

Captain *Sprye* to Sir *Stafford H. Northcote*, Bart., M.P., &c. &c. &c.

Sir,

12 October 1867.

THINKING it possible that the copy before sent may not have attracted your notice, and it appearing to me a favourable time for my addressing you on the subject, I send you, in convenient pamphlet form, such as have yet reached me of the fresh set of memorials which have been sent up to Her Majesty's present Ministers, in further recommendation to the earnest consideration of the Government of the long expressed desire of the memorialists to have active and regular commercial intercourse established with Shan States and West of China, by railway direct from the Port of Rangoon.

The memorialists in question are from the Manchester, Liverpool, Leeds, Bradford, Dewsbury, Halifax, Huddersfield, Batley, Cheshire, and Worcestershire, &c., Chambers of Commerce, and from the East India and China, and the Ship-owners' Associations of Liverpool.

You will observe, Sir, that being 11 in number, they bear the general numbers of XXVII. to XXXVII., so many as 26 others, all praying for the same peaceful extension of British trade in the East, having been previously addressed by the same, or other such memorialists, between the years 1859 and 1865, to Prime Ministers Lords Palmerston and Russell, and to members of their Cabinets; but, to their discredit, in vain. (*See Parliamentary Papers, "China, No. 5, 1864".*)

You will also see, Sir, if you do the cause the justice to read them, that these 11 renewed appeals on the subject to the Cabinet of which you are a prominent member, embrace a fifth from the East India and China Association of Liverpool to different Ministers since 1859, a fourth from each of the Chambers of Liverpool, Leeds, and Huddersfield, and a third from each of the Chambers of Manchester, Halifax, Cheshire, and Worcestershire, and the Liverpool Shipowners' Association, "forming," as the Huddersfield Chamber observed to the Earl of Derby, "a very remarkable concurrence and expression of influential commercial opinion upon the subject." In reference to this, I beg further to state to you that, while each such repeated appeal to the two preceding ministries to have the trade in question opened to British enterprise in the manner the memorials have severally indicated was more urgent than those preceding it, no reason entitled to consideration, or, perhaps, becoming English Ministers to offer in such a foreign-trade question, was offered to the manufacturing and commercial interest of the country for Government hostility to a project which offered such prospective benefit to them, and promised so much permanent gain to the empire at large. Having through several years enjoyed, with my late most dear son, unreserved in-

tercourse with a large portion, and the best portion of the mineral, manufacturing, shipping, and merchant bodies of the kingdom, from Glasgow and Hull to Bristol, I can state to you, Sir, that a deep feeling does exist among them, and especially throughout South Lancashire and the West Riding of Yorkshire, that their interests have not been adequately represented in past Cabinets, or sufficiently considered by past Governments—those of Lords Palmerston and Russell, especially the, I fear, overpraised French treaty, notwithstanding; and that this opinion has been generally entertained of the Foreign and Indian departments, more than of others; and most justly so, according to my experience of them, when they were presided over by Lords Russell and Clarendon, Sir Charles Wood and Lord de Grey and Ripon.

To this statement I can as confidently add, Sir, as I do with real gratification, that the attention Lord Cranborne gave to the long neglected question of “Trade with the Shans and Western Chinese by Rail from Rangoon,” and the Despatches he thereon addressed in the name of Her Majesty’s Government to the Viceroy of India, dated 29th September 1866, and 7th February 1867,—as these appear in pages 10 and 16 of Parliamentary Paper, “Rangoon and Western China, 333, Session 1867,”—gave very great general satisfaction, as showing a mind in Lord Derby’s Government not to be overruled by “old Indian” routine, but to secure for the country, without further dangerous delay,—and I use the term “dangerous” advisedly, Sir, in reference to my knowledge of French advances up the Kamboja River from Saigon,—the direct and regular trade which the Shans and Western Chinese have, since 1837, unceasingly desired with us, from our very much nearer and far better positioned ports in the Gulf of Martaban.

I hope, therefore, that you will now lead the Government to which you belong, as Secretary of State for India, to secure to itself the lasting credit of achieving this all-peaceful and most desirable extension of the foreign trade of the country, and to reap the fruit thereof in that general commercial approval which, as I can vouch to you, its now achievement will command throughout all the manufacturing districts and commercial ports of the kingdom, and especially those of the West Riding of Yorkshire and South Lancashire.

I have written to you more freely, perhaps, Sir, than becomes our relative positions; feeling that I am a Devonshire man, born and bred, addressing another of that county, and that my family derives variously from those of Drake, Raleigh, and Hawkins, whose efforts in their day beneficially to serve their country I have striven to imitate thus far to the injury of my family, and only to bear with every possible Whig official slight.

COMMERCIAL OPENING of the SHAN STATES and WESTERN PROVINCES of CHINA, by Railway, from the Port of RANGOON.

THIRD SERIES of MEMORIALS thereon to Her Majesty’s Ministers from Chambers of Commerce.

NOTE.

The introduction of 16 pages, intended to this my eighth pamphlet on commerce with the Shans and Western Chinese, is reserved until the further memorials to Her Majesty’s Government in favour of the proposition are printed, in continuation of the following 11: Nos. XXVII. to XXXVII., of which some copies are at present thus circulated.

After the hundred and more fruitless appeals from me and my lamented son to different of Her Majesty’s Ministers on the subject since 1857, supported through the long period by so many and such memorials from the principal Chambers of Commerce of the country, it is greatly satisfactory and encouraging that

that the two latest Parliamentary Papers on the project—"Rangoon and Western China, 233," and "Rangoon, 421," both of this Session, show that this important proposition for the peaceful spread of British trade over a large, populous, and rich portion of interior Asia, though still objected to by the authorities at Calcutta, is no longer slighted or evaded by the Home Government.

For this change, acknowledgments are most unquestionably due to Lords Stanley and Cranborne, Sir Stafford Northcote, and the present Chancellor of the Exchequer. And though the Viceroy of India and his Council continue, most unaccountably, to object to their policy herein, it is gratifying to see in the same Parliamentary Papers that, as regards the interests even of India, the objections offered from Calcutta are most unsound and wholly untenable; while they are more so, if possible, as regards what is justly due from the Indian Government to the commercial interests of the United Kingdom.

To obtain, therefore, this very desirable extension of the national trade with India and China, seems only now to require that it be still for a while earnestly pressed on the favourable consideration of the Viceroy of India, through Her Majesty's Ministers, by the general manufacturing and mercantile bodies of the country, who have thus far so ably supported my 10 years' labour in their behalf, and without whose continued aid my individual efforts, however strenuous, may yet unhappily fail.

Richard Sprye.

18, St. George's-terrace, South Kensington,
20 July 1867.

MEMORIAL XXVII.

Liverpool, 10 July 1866.

To the Right Honourable Viscount *Cranborne*, M.P., Her Majesty's Secretary of State for India in Council.

The Memorial of the Liverpool East India and China Association.

Showeth,

THAT your memorialists are extensively engaged in trade with India and China, and are necessarily much interested in every opening that can be found for its peaceful extension in those countries.

That since the annexation to British India in 1852, of the Burman Sea Coast Provinces of Pegu and Martaban, it has been proposed that the Shan States adjoining them on the north-east and the west of China, should be commercially opened, under friendly arrangements with the King of Avra, by a railway from the Port of Rangoon, across Eastern Pegu and the Burman Shan State of Kiang-Tung to Kiang-Hung, on the right bank of the Meikong or Upper Kamboja River, near to where it issues from the Chinese western province of Yunan, a navigable stream for deep laden boats.

That having very fully considered the importance of such a peaceful extension of British and Indian trade over those interior portions of Eastern Asia, and become satisfied of its practicability with the co-operation and support of Her Majesty's and the Indian Governments, your memorialists, on the 23rd of September 1862, addressed a memorial to your Lordship's predecessor in office, the then Sir Charles Wood, praying that a commercial treaty might be negotiated with the King of Ava to facilitate the transit of merchandise across his territory to the west of China. In reply to which, the then Secretary of State for India informed your memorialists, on the 25th of September 1862, that,—

"He directed the notice of the Government of India to the subject in June 1861, and that he has recently received a Despatch, stating,—'that the Chief Commissioner of British Burma has been desired to keep his attention directed to the prospect of trade with Western China, and to avail himself of every favourable opportunity to obtain knowledge of the several routes which have been suggested for tapping the commerce of China in that quarter.'"

That a commercial treaty having been negotiated with the King of Ava on the 10th of November 1862, before that memorial could have reached the Government of India, your memorialists, finding that no provision was made therein for a direct trade from Rangoon with the above-named Shan States and West of China, addressed a letter on the 28th of August 1863, to Her Majesty's then President of the Board of Trade, Mr. Milner Gibson, upon the subject, urging the advantage to British commerce of a direct land route being opened between the Port of Rangoon and the south-west frontier of the Chinese Province of Yunan, and praying that a professional survey of the country between Rangoon and the Upper Kamboja River might be undertaken. In reply to which the President of the Board of Trade informed your memorialists, on the 4th of September 1863,—

“That copies of their letter had been transmitted to the Foreign Office and to the Secretary of State for India.”

That, not being favoured with any communication thereon from the Foreign Office, your memorialists, on the 13th of November 1863, addressed a letter to Her Majesty's then Secretary of State for Foreign Affairs, Earl Russell, referring to their above letter to the President of the Board of Trade, and respectfully inquiring whether Her Majesty's Government had decided upon taking any action thereon. To which Earl Russell replied under date the 25th of November 1863, informing your memorialists,—

“That the matter to which they referred more immediately comes within the department of Her Majesty's Secretary of State for India, to whom the association should address themselves.”

That, consequently, your memorialists, on the 27th of November 1863, addressed a letter to Her Majesty's then Secretary of State for India, the then Sir Charles Wood, stating that Earl Russell had referred them to him for the desired information, and requesting that they might be furnished with it. In answer to which the Secretary of State for India informed your memorialists, by letter dated the 7th December 1863,—

“That the Government of India had been instructed to report on the best means to be adopted for developing the resources and improving the intercommunications of British Burma. Pending the receipt of this report, Sir Charles Wood is not prepared to issue any further or more specific orders on the subject.”

That by the Parliamentary Paper of 1864, “China, 0.77,” your memorialists see that upwards of 20* memorials were forwarded to Her Majesty's Ministers from other principal Commercial Chambers and Associations of the United Kingdom, advocating and praying for this proposed extension of trade from Rangoon to the Burman Shan States and Western China.

That, nevertheless, your memorialists have not been favoured with any communication on a subject so important to them and to the country at large, nor have they learned that Her Majesty's Government has as yet decided upon taking action therein.

That the memorandum and map by Captain Williams, Assoc. Inst. C.E., and Inspector of Public Works in the Rangoon Division of British Burma, dated the 21st of January 1865, and presented to Parliament last Session, Parliamentary Paper, “Rangoon and Western China, 373, 1864,” fully establishes that a railway for direct commerce from Rangoon with the Burman Shan States and Western China, can be easily and cheaply constructed; Captain Williams' elaborate report, concluding with the following forcible paragraph:

“After a very careful consideration of the entire subject, and giving to all the arguments and statements of objectors their full weight, I do not hesitate to record it as my professional opinion, founded on my own personal knowledge of the features of the country to be traversed, acquired during a residence

* Twenty-six in all, to that date; since when seven, or more, further and still more pressing memorials have been presented to the Earl of Derby's Government—we have yet to see with what better effect—in favour of this project for the peaceful extension of the Foreign Trade of England and India, over a large, rich, and populous portion of interior Asia, never yet visited by British merchants.

residence of nearly 12 years in British Burma, that 'the direct land route, suggested by Captain Sprye, from Rangoon to Kiang-Hung, *via* the Takoo Ford of the Salween River, has in no way been shown to be impracticable. But, on the contrary, that what is before me in support of such an opinion tends strongly to establish the very reverse—the perfect practicability of the route for a railway. And since a thorough survey of the route cannot be expensive beyond its utility, the vast importance of the object to be obtained is such as fully to warrant the outlay incident to a careful survey, and the submission of the results to the British Government."

That in reference to the foregoing, and without touching upon the commercial importance of extending the Indo-European telegraph, as also proposed by Captain Sprye, by the same land route to Hong Kong, &c.—

Your memorialists again pray,—

First. That your Lordship will be pleased to authorise a thorough professional survey by some eminent railway engineer of this country, to ascertain the best line for a railway to be carried from Rangoon to the extreme north-east frontier of the British Provinces of Pegu and Martaban; and thence, by the Takoo Ford of the Salween River, through Kiang-Tung to Kiang-Hung, or by any other preferable route, to the Meikong or Upper Kamboja River on the south-west frontier of China proper.

Second. That your Lordship will move Her Majesty the Queen to send an envoy of suitable rank to his Majesty the King of Ava, to negotiate, under your Lordship's instructions, the necessary friendly and equitable arrangements with his Government, in so far as the line may have to pass across Shan territory tributary to his Majesty.

And your Memorialists will ever pray, &c.

On behalf of the Association,
(signed) *A. D. Anderson*, President.

MEMORIAL XXVIII.

Liverpool, 19 July 1866.

To the Right Honourable Lord *Stanley*, M.P., Her Majesty's Secretary of State for Foreign Affairs.

The Memorial of the Liverpool Chamber of Commerce,

Humbly Showeth,

THAT no direct commerce now exists between the British possessions in the East and the Western Provinces of China, although their borders lie within 250 miles of each other.

That in order to reach those provinces, at present, a detour of several thousand miles by sea and river is needful; which a direct land communication, by means of a railway starting from the Port of Rangoon, would reduce to a few hundred miles only.

That one-half of this communication would, or might be, within British possessions—namely, British Burma; and the remainder through a territory called the Shan States, tributary to the King of Ava; with which Sovereign we have now a commercial treaty which, doubtless, could be extended so as to fix transit duties through his dominions on a moderate scale.

That your memorialists do not ask the Government to construct such a line of railway, but rather that it should undertake a full and efficient survey of the whole intervening country, by duly qualified engineers; the result of which would determine whether private enterprise might be legitimately directed towards such an object or not.

That on three previous occasions your memorialists have addressed themselves to Her Majesty's Government on the subject—namely,

On the 23rd of August 1860,
On the 3rd of September 1862, and
On the 6th of October 1863.

That two other commercial bodies in Liverpool—namely, The East India and China Association and the Shipowners' Association—have, at different times, similarly urged the subject on the consideration of Her Majesty's Ministers.

That, in addition to these, a large number of other Chambers of Commerce throughout the United Kingdoms have memorialised Government to the like effect.

That Sir Charles Wood, then Secretary of State for India, stated in reply to this Chamber, on the 16th of October 1863,—

“That the Government of India have been instructed to report on the best means to be adopted for developing the resources and improving the intercommunications of British Burma. Pending the receipt of their report, Sir Charles Wood is not prepared to issue any further or more specific orders on the subject.”

That your memorialists have now before them a Parliamentary Paper, “No. 373, dated the 15th of June 1865,” being,

“Copy of an official memorandum by Captain Williams, Inspector of Public Works, Rangoon Division of British Burmah, upon Railway Communication between Rangoon and Western China, with Map relating thereto.”

And which they presume is the report referred to by Sir Charles Wood. The concluding sentence of it runs thus,—

“After a very careful consideration of the entire subject, giving to all the arguments and statements of objectors their full weight, I do not hesitate to record it as my professional opinion, founded on my own personal knowledge of the features of the country to be traversed, acquired during a residence of 12 years in British Burma, that the ‘direct land route’ suggested by Captain Sprye, from Rangoon to Kiang-Hung, *viâ* the Takoo Ford and Kiang-Tung, has in no way been shown to be impracticable; but, on the contrary, that what is before me in support of such an opinion tends strongly to establish the very reverse—the perfect practicability of the route for a railway. And, since a thorough survey of the route cannot be expensive beyond its utility, the vast importance of the object to be obtained is such as fully to warrant, in my opinion, the outlay incident to a careful survey, and the submission of the result to the British Government.

(signed) . “J. M. Williams,
“Captain, H. M. Indian Army, Executive Engineer,
Rangoon Division, British Burma.”

That, with such evidence before them, your memorialists cannot but express their deep regret that no steps have yet been taken towards such needful engineering survey.

That your memorialists need hardly press upon the attention of Her Majesty's Government the great desirability of obtaining a land route for the extension of the Indo-European Telegraph wires to the British Settlements in China; a consideration which adds to the importance of that survey.

That your memorialists, therefore, believing that the commercial community are deeply interested in the establishment of a safe, direct, and easy overland communication with Western China from the Port of Rangoon, and in the extension, by the same route, of the Indo-European Telegraph to Hong Kong, &c.; and being confirmed, by a perusal of Captain Williams' memorandum, in their belief of the practicability of forming a railway from Rangoon across the Pegu province of British Burma and the Kiang-Tung and Kiang-Hung Shan States of the King of Ava; now again address Her Majesty's Government through your Lordship, praying,—

That

That a prompt and careful survey may be made of that part of the country through which such railway can be constructed, and that such survey may be executed by professional engineers. And,

That an Envoy, of suitable rank, may be sent from Her Majesty the Queen to the King of Ava, instructed to negotiate with his Majesty, not only for the survey across those Shan States, but also for fixing the transit duties upon merchandise on a moderate scale.

On behalf of the Liverpool Chamber of Commerce,

(signed) *H. W. Meade King*, President.

MEMORIAL XXIX.

Huddersfield, 31 July 1866.

To the Right Honourable the Earl of *Derby*, K. G., First Lord of Her Majesty's Treasury, and the other Lords thereof.

The Memorial of the Huddersfield Chamber of Commerce,

Showeth,

THAT in the year 1860 the attention of your memorialists was called to the question of the practicability of establishing a more direct commercial intercourse with Western China than the ship route to the ports on the east coast of that empire.

That it is now well established that the Western Provinces of China are densely peopled with a race of industrious and enterprising people, and yield many valuable articles of commerce, such as tea, silk, cotton, gums, dyes, wax, and metals, well suited for English markets, and against which British manufactures might be readily exchanged; and constitute a most important market, capable of being developed to an enormous extent by the facilities which a direct commercial intercourse would afford; and yet are practically shut out from this country by the distance and difficulties of the existing communication through the eastern ports and across the vast intervening eastern and central provinces of the Chinese empire.

That your memorialists, being deeply interested in all projects having for their object and result the development of the foreign commerce of the country, addressed a memorial, in August 1860, to Her Majesty's Government, pointing out the desirability of entering into such arrangements with the King of Burma or Ava, and of making such preparations by way of surveys, or otherwise, as would expedite and facilitate the making of a commercial road, or railway, from the Port of Rangoon across British Pegu and the south-east of Burma to Esmok, the Chinese frontier city nearest to Kiang-Hung and the other Burman Shan States.

That, after having addressed the above memorial to Her Majesty's Government, considerable further information, from various sources, was brought under the consideration of your memorialists; and they carefully considered the merits of the direct land route of communication between Rangoon and Western China projected by Captain Sprye, as compared with other proposed routes, and became still more thoroughly satisfied that it presented such manifest superiority and practicability as to warrant, and indeed to call for, an authorised and official survey. And as your memorialists still felt deeply impressed with a conviction of the commercial importance of the projected communication, they, in December 1863, addressed a second memorial to Her Majesty's Government, praying for such survey to be at once directed.

That among other considerations, to which your memorialists then called attention, and with the importance of which they are still much impressed, was the fact that the treaty of commerce then recently concluded with the King of Burma indicated a favourable disposition on his Majesty's part towards this country; and afforded a good prospect of obtaining supplemental facilities for the establishment of the proposed communication, and of acquiring treaty rights for its continuance and for the transit of merchandise on reasonable terms.

That your memorialists also considered, and still believe, that the Emperor of the French is fully alive to the advantages of his newly-acquired position in Cochin China, and will very probably endeavour to open up the Western Provinces of China to French commerce, by the river Kamboja route; and that the activity and recent development of French commerce, and the growing competition of French with English manufacturers in neutral markets, render this consideration at present one of greatly increased importance; and would make doubly serious the consequence of any delay on the part of Her Majesty's Government in securing the advantages afforded by the superior position and shorter route available to them from British Pegu.

That the communications which your memorialists received from Her Majesty's Government, in reply to their memorials on this subject, have not been such as to satisfy the very reasonable wishes expressed by your memorialists. And your memorialists observe with much regret, from a Parliamentary Paper, 0.77, issued on the 17th of March 1864, that to similar memorials from above 20 Chambers of Commerce and leading commercial bodies, forming a very remarkable concurrence and expression of influential commercial opinion upon the subject, similar unsatisfactory answers only have been vouchsafed; whereby, in effect, an official negative has, without any assigned reason, been pronounced upon even the preliminary surveys requisite for the proper consideration of a project fraught with such deep commercial interest.

That on whatever grounds of hesitation Her Majesty's Government may have hitherto rested with reference to the projected inter-communication, the official memorandum, with map, of Captain Williams, Assoc. Inst. C.E., and Executive Engineer, British Burma, published by order of the House of Commons, on the motion of Sir James Fergusson, Bart., on the 15th of June 1865, places the subject in a new and much more favourable position as regards the feasibility of the projected route, and its general features and advantages. It is abundantly clear, from this report, not only that there exist no insurmountable difficulties of construction in the "direct land route" finally selected by Captain Sprye, but that it is as expressed in the memorandum, "the route which can alone be followed to realise the desired object, viz.,—a direct and continuous trade between Rangoon and Western China." Captain Williams also expresses very plainly his conviction, "after much and careful consideration of the subject, that any other commercial way to the west of China is impossible, unless at such enormous outlay in construction as even the great object to be attained would not justify."

That the independent and official testimony afforded by Captain Williams in support of the views and opinions of Captain Sprye—whose long experience, personal knowledge, and extensive researches and efforts, in connection with the projected direct land route, entitle him to the gratitude of all who are interested in the promotion of British commerce—lead irresistibly to the conclusion that no further delay ought to take place in the requisite surveys of it being directed.

That the dislocations which have taken place in existing markets, through Continental and American disturbances, impress your memorialists with the conviction that it is more than ever necessary to encourage and provide new markets for the productions of British industry; and that as regards our Indian Empire, the policy of its development by means of new roads and intercommunications, in lieu of the hitherto policy of war and annexation, becomes constantly more manifest as the true English policy. And your memorialists very firmly believe that in no instance can this policy be more manifest by its beneficial results than in the project for direct land communication with the rich and teeming provinces of Western China from the Port of Rangoon.

Your memorialists therefore pray,—

That your Lordship will be pleased forthwith to authorise and direct a proper official survey, by a competent civil engineer of this country, of the best route for a railway or road communication from Rangoon, *via* Kiang-Tung and Kiang-Hung, to the South-western Provinces of China.

Also, that suitable diplomatic communication may be entered into with the King of Burma, so as to cement and promote friendly relations with that monarch, and to obtain by treaty the requisite concessions and facilities for the projected way.

And

And lastly, that your Lordship may be pleased to take into favourable consideration the eminent qualifications and experience of Captain and Mr. Sprye in connection with the desired communication, with the view of the same being rendered available in ascertaining and determining the best and most practicable route for the commercial intercourse desired to be established.

And your memorialists will ever pray, &c.

On behalf of the Chamber,

(signed) *Wright Mellor*, President.

MEMORIAL XXX.

Manchester, 25 August 1866.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury.

The Memorial of the Directors of the Chamber of Commerce of Manchester, by their Chairman,

Respectfully sheweth,

THAT on the 12th of July 1860, and on the 2nd of July 1863, memorials were addressed by this Chamber to Her Majesty's Government, urgently representing the great advantages which would accrue to the commerce of both Great Britain and India, by opening overland communication with the western portion of the Chinese Empire, across the British possession of Pegu and the Shan territory of the King of Burma.

That your memorialists are aware that numerous memorials of a similar character have been addressed to Her Majesty's Government from various commercial and other public bodies throughout the United Kingdom, and that therefore the authorities in the several public departments must be fully conversant with the particulars of the project for the above-mentioned object.

That your memorialists consequently forbear to enter into further details on the present occasion, and content themselves by stating that they adhere to the opinions already expressed by them upon the subject, and to their recommendation of the course suggested in their former memorials, fortified as they have been by recent reports, received from India, as to the practicability of the enterprise. And they would, therefore, earnestly entreat your Lordship to give instructions,—

That steps may be taken effectually to survey the line of country between Rangoon and Kiang-Hung on the Meikong or Upper Kamboja River, a distance of about 500 miles, the first half of which is British territory; your memorialists being firmly of opinion that the commercial advantages likely to flow from the opening up of a communication overland between Rangoon and China, would far outweigh the comparatively trifling expense with which the proposed survey would be attended.

And your memorialists will ever pray, &c.

For and on behalf of the Directors of the Manchester Chamber of Commerce.

(signed) *Malcolm Ross*, President.
Hugh Fleming, Secretary.

MEMORIAL XXXI.

Halifax, 30 August 1860.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury; the Right Honourable *Benjamin Disraeli*, M.P., Chancellor of Her Majesty's Exchequer, and the other Lords of Her Majesty's Treasury.

The Memorial of the Chamber of Commerce of Halifax,

Showeth,

THAT in the year 1860, the Bradford Chamber of Commerce, with which this Chamber was then incorporated, addressed a memorial to the then First Lord of Her Majesty's Treasury, the late Viscount Palmerston, K.G., pointing out the desirability of commercially opening the inland Western Provinces of China proper, from the port of Rangoon; and praying that Her Majesty's Government would take the same into early consideration, and adopt all requisite measures for such extension of the foreign trade of the country. That memorial, dated six years back, stated in conclusion,—

“ That, if those provinces were opened, a large extent of our manufactured goods would be exported to them, while we should receive from them an almost inexhaustible supply of raw materials with which those provinces abound, and which are suitable for our manufactures.

“ That the then memorialists had had an opportunity of reading memorials on the subject, forwarded to his late Lordship by other Chambers of Commerce of the north of England, and they desired to express their hearty concurrence in the sentiments contained therein.

“ That the then memorialists believed that it was, at the then present time, most desirable that negotiations should be entered into with the King of Ava for a route from the north-eastern point of British Pegu, across the south-east angle of his Majesty's kingdom, to the south-west frontier of China, in continuation of a route from our port of Rangoon, in the Bay of Bengal, to the extreme north-east point of British Pegu.

“ That the then memorialists believed there would be no difficulty in negotiating for this with the King of Ava, if an Ambassador were sent to him direct from Her Majesty the Queen. And

“ The then memorialists, therefore, strongly prayed that Her Majesty's then Government would be pleased to adopt early and energetic measures to secure to this country a trade with the inland western half of the vast Empire of China.”

That, in answer to such their prayer, the then memorialists were informed, by letter from Mr. Hammond, Under Secretary of State for Foreign Affairs, dated the 27th of August 1860,—

“ That the project advocated did not appear to Lord John Russell to be feasible, at least for the present.”

That three years later, namely, on the 26th of October 1863, your memorialists, having previously formed a Chamber of Commerce of the borough of Halifax, addressed a further memorial on the subject to the same First Lord of Her Majesty's Treasury, submitting still more important commercial reasons for the forthwith opening of the desired new eastern trade; and praying,—

“ That early instructions might be given to the Indian Government to cause a survey to be made by some eminent engineer of repute, in whose report the mercantile community of the kingdom would have full confidence; and who should be specially instructed to direct his survey so as to discover the best practicable route for an active commerce to be carried on to and fro between Rangoon and Kiang-Hung on the Upper Kamboja River, the year through, unimpeded by the monsoon rains.”

That the reply received by this Chamber to that further memorial, was a letter from the then Secretary of State for India, the then Sir Charles Wood, dated the 29th of October 1863, stating,—

“ That

"That the Government of India had been instructed to report on the best means to be adopted for developing the resources and improving the inter-communications of British Burma; and that, pending the receipt of their report, Sir Charles Wood was not prepared to issue any further or more specific orders on the subject."

That since the receipt of that letter, now close upon three years back, and full six years from the date of the memorial first above referred to, your memorialists have been favoured with no other communication on the subject, from any department of State.

That it is undeniable that the inland western provinces of China proper are inhabited by a very numerous and industrious population; that they produce many articles particularly suitable for European consumption, and which they would readily exchange for British goods; and that they thus constitute a market capable of being yearly more and more extended, not only over the western interior of China proper, but also over the Laos country, Thibet, and Tartary, by means of the Chinese merchants of Yunan and Szechuen, who now trade extensively with those countries.

That the Chinese south-west frontier city of Esmok, which in the dry season sends forth its trading caravans over the country of Laos, and over the Shan States of both Birma and Siam, is only about 40 miles distant from the before-named Shan city of Kiang-Hung, which is situated on the right bank of the Meikong or Upper Kamboja River; a little south of the point where that river issues from China, a stream of very considerable width and depth, capable of being made a highway for trade a long distance both above and below Kiang-Hung; and, by means of it many tributary streams, and their connecting canals and roads, with very extensive and populous tracts of inland country, right and left of it.

That the existing route for the transport of merchandise between Rangoon and China by the Irawadee river, *viâ* Bhamo, across the Black Mountain ranges to the north-west of Yunan, is of very great length, tedious and uncertain in its river portion, and difficult and dangerous at all times in its land part; which last portion is available but for a short period of the year, and this only for goods in small quantities, carried by mules and ponies travelling with an armed escort, at a very slow rate, and having to be laden and unladen three times a day, which alone, in a land journey of many days, must greatly injure the goods so conveyed.

That the following Parliamentary Papers having direct reference severally to this projected peaceful extension of the foreign trade of the home country, and of the Indian portion of Her Majesty's empire, over extensive, rich, and populous parts of Eastern Asia, as yet unvisited, it may be said, by British merchants, have been presented to the House of Commons since your memorialists sent up their previous memorials, namely:—

1. "China, No. 5, 1864." Presented to the House on the 17th of March 1864, on the motion of Mr. Baines, Member for Leeds.

2. "Burma Commercial Treaty." Presented on the 13th of May 1864, on the motion of the same Member.

3. "China, No. 2, 1865." Presented to the House of Commons, in pursuance of their Address of the 23rd of May 1865.

4. "Rangoon and Western China." Presented to the same House on the 15th of June 1865, on the motion of Sir James Ferguson, Bart., Member for Ayrshire, and now Under Secretary of State for India.

5. "East India (British Burma)." Copy of the Report of R. Temple, Esq., and Colonel H. Bruce, on British Burma. Presented to the House of Commons on the 22nd of June 1865, on the motion of Lord Stanley, now Secretary of State for Foreign Affairs.

6. "East India (Shan States, &c.)" A letter from Captain and Mr. Sprye to Sir Charles Wood, Secretary of State for India, dated the 15th of January 1866. Presented on the 14th of June 1866, on the motion of Mr. Cheetham, Member for Salford.

That your memorialists, looking to the greatly increased and still increasing competition which British trade has to encounter in neutral markets, are of opinion that provision for this direct trade with the Shan States, west of China, and adjacent country of Laos, from the port of Rangoon, should be no further delayed.

That your memorialists, therefore, again beg leave respectfully to express to Her Majesty's Ministers, through your Lordships, the great importance to the foreign trade of the country of a commercial way being constructed, by the best and most direct route, from Rangoon to the Upper Kamboja River, or to the south-west frontier of China, such as shall be practicable for commerce at all seasons of the year.

That your memorialists venture, with deference, to suggest that the services of Captain Sprye, and his son Mr. R. H. F. Sprye, might be useful to Her Majesty's Government in furtherance of the projects on which they have through many years collected and disseminated much valuable information, geographical and commercial.

Your memorialists, therefore humbly pray—

That your Lordships will be pleased forthwith to instruct the Indian Government to take all necessary measures for a survey of the country between Rangoon and Kiang-Hung, with a view to the opening of a practical and direct route to Western China.

That to facilitate such survey, so far as any part of it may have to be carried across territory subject or tributary to the King of Ava, and to strengthen the friendly relations between the two countries and their Governments, an envoy of becoming rank, and of official or court position, may be sent from England by Her Majesty the Queen to his Majesty the King of Ava, instructed by the Secretary of State for India in Council, to negotiate with the Ava Government for its friendly co-operation and assistance, where needed, in the survey; and otherwise as may be found necessary to the object in view.

And your memorialists will ever pray, &c.

(signed) *Edward Akroyd*, President.

MEMORIAL XXXII.

Chamber of Commerce, Bradford, 30 November 1866.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury.

My Lord,

I HAVE the honour to transmit herewith to your Lordship a memorial from the Bradford Chamber of Commerce, with reference to the great desirability of means being now taken by Her Majesty's Government to establish a direct commercial intercourse with Western China.

The Chamber directs me, in doing so, respectfully to express to your Lordship their belief that it will be satisfactory to the general manufacturing and commercial interests of the kingdom, if the long study of this question by Captain and Mr. Sprye, and the valuable information they have through many years collected in regard to it, are brought to bear in any arrangements that may be made for the desired professional survey of the route; and otherwise generally in the carrying out of the project.

I have, &c.

(signed) *John Darlington*, Secretary.

Bradford, 30 October 1866.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury, and the other Lords thereof.

The Memorial of the Bradford Chamber of Commerce,

Showeth,

THAT in August 1860 your memorialists, after having carefully examined into the merits of the project for direct trade from Rangoon with the inland western provinces of China proper, addressed a memorial to the late Viscount Palmerston, K.G., then First Lord of Her Majesty's Treasury, as follows:—

“That your memorialists represent the worsted district, containing an industrial population of about half a million.

“That your memorialists believe a wide field for extended commerce exists in the inland western provinces of China, and that if those provinces were opened to British trade, a large extent of our manufactured goods would be exported to them, while we should receive from them an almost inexhaustible supply of raw materials with which those provinces abound.

“That your memorialists have had an opportunity of reading memorials on the subject forwarded to your Lordship by Chambers of Commerce of the north of England, including those of Leeds, Manchester, Huddersfield, &c.; and they desire to express their hearty concurrence in the sentiments contained therein.

“That your memorialists believe that it is at the present time most desirable that negotiations should be entered into with the king of Burma for a route from the north-east of British Pegu, across the Shan States of Kiang-Tung and Kiang-Hung, forming the south-east angle of his kingdom, to the south-west frontier of China proper, in continuation of a route from our port of Rangoon, in the Bay of Bengal, across Eastern Pegu.

“That your memorialists believe there will be no difficulty in negotiating for this with the King of Burma, if an ambassador be sent to him direct from Her Majesty the Queen.

“Your memorialists therefore pray that Her Majesty's Government will be pleased to adopt early and energetic measures to secure to the country the desired direct trade with the inland western half of the vast empire of China proper from the port of Rangoon.”

That Viscount Palmerston was pleased to refer that memorial to the then Secretary of State for Foreign Affairs, Lord John Russell, whose Under Secretary, Mr. Hammond, wrote to your memorialists on the 27th of August 1860, stating:—

“I am directed by Lord John Russell to inform you that Viscount Palmerston has referred to his Lordship the memorial of the Bradford Chamber of Commerce, urging that in any negotiations which may follow a pacification of affairs with China, stipulations should be included for opening up the western inland provinces of that empire to British trade, by an overland route from the port of Rangoon; and I am to state to you that the project advocated in your memorial does not appear to Lord John Russell to be feasible, at least for the present.”

That Parliamentary Papers, “China, No. 5, 1864,” and “China, No. 2, 1865,” show that between June 1860 and February 1864, 26 memorials were transmitted to the late Viscount Palmerston, and different members of his Government, from the leading Commercial Chambers and Associations of the United Kingdoms, all advocating the proposed opening of trade with the west of China from Rangoon, by the most direct route; praying, more or less earnestly, that an envoy might be sent from the Queen to the king of Burma to negotiate with his Majesty on the subject; and that a provisional survey might be made of the country, under the direction of an English railway engineer of eminence, to ascertain the best route for the construction of a commercial way capable of carrying merchandise to and fro, the year through, independent of the monsoon rains.

That it appears also, by the Parliamentary Papers above referred to, that, in June 1861, the late Secretary of State for India, Sir Charles Wood, Bart., "directed the notice of the Government of India to the subject;" that previous to the 25th September 1862, he received a Despatch in reply, stating, "that the Chief Commissioner of British Burma has been instructed to keep his attention directed to the prospects of trade with Western China, and to avail himself of every favourable opportunity to obtain a knowledge of the several routes which have been suggested for tapping the commerce of China in that quarter;" and that, on the 16th of October 1866, the same Minister answered a memorial on the subject from the Liverpool Chamber of Commerce, dated the 6th of the same month, by stating, "that the Government of India have been instructed to report on the best means to be adopted for developing the resources and improving the inter-communication of British Burma. Pending the receipt of this report, Sir Charles Wood is not prepared to issue any further or more specific orders on the subject."

That notwithstanding these communications from Her Majesty's Ministers to the commercial communities of the country, and the instructions so given, from time to time, to the Government of India, no progress has really been made towards the accomplishment of an object which your memorialists believe would open extensive new fields to British Commerce.

Your memorialists therefore pray,—

That your Lordships will please forthwith to authorise and direct a proper official survey, by a competent civil engineer of this country, of the best route, for railway communication from Rangoon, *via* Kiang-Tung and Kiang-Hung to the south-western provinces of China.

And that suitable diplomatic communication may be entered into with the King of Burma to cement and promote friendly relations with that monarch, and to obtain, by treaty, the requisite concessions and facilities for the projected route and trade.

(signed)

Henry W. Ripley, President.
John Darlington, Secretary.

MEMORIAL XXXIII.

Leeds, 15 January 1867.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury; the Right Honourable *Benjamin Disraeli*, M.P., Chancellor of Her Majesty's Exchequer, and the other Lords of Her Majesty's Treasury.

The Memorial of the Leeds Chamber of Commerce,

Showeth,

THAT the Shan States and western inland provinces of China proper, on the north-east of the British Burman Provinces of Pegu and Martaban, comprise a very large extent of Central Asia, beyond the Ganges; contain numerous and industrious populations, who carry on a large internal trade with the whole west and west centre of China proper, as well as with the Laos States, Tibet, and Tartary; and produce, among other articles suitable for exchange against the products and manufactures of the United Kingdoms and the colonies, silk, the grass cloth fibre, cotton, tea, gums, dyes, wax, lac, gold, silver, and white copper.

That in August 1860, your memorialists having strong reason to believe that, if a way for direct commerce was opened from Her Majesty's port of Rangoon, across Eastern Pegu and the two Burman Shan States of Kiang-Tung and Kiang-Hung, to the south-west frontier of China, great and permanent advantages would result to the United Kingdoms and their dependencies, they memorialised the late Viscount Palmerston, the then First Lord of Her Majesty's Treasury, soliciting the consideration of the Government to this subject. To that memorial, your memorialists would be permitted to refer your Lordships,* here submitting its sixth paragraph only, viz.,—

"6. For

* Parliamentary Paper, "China, No. 5, 1864."

" 6. For which extension of commerce, seeing that a portion of the Kingdom of Burma, viz., the two tributary Shan States of Kian-Tung and Kiang-Hung, will have to be traversed, your memorialists beg to submit to the consideration of Her Majesty's Government the expediency of sending a civilian envoy from England to his Majesty the King of Burma, to announce to him the fact of Her Majesty's having assumed direct rule over the Indian portion of her empire, to offer to his Majesty her Royal friendship, and to express the hope that the people of Burma and those of the United Kingdoms and British possessions may enjoy permanent peace, and be privileged to trade to mutual advantage with each other, as also with the Chinese, under the protection of the two Crowns."

That the acknowledgment of that memorial not proving such as your memorialists had hoped to receive, they, in the month of September 1860, addressed a second memorial on the subject to the then Secretary of State for Foreign Affairs, Lord John Russell, to which memorial they would also respectfully refer* your Lordships, here only troubling you with its third and fourth paragraphs, viz.,—

" 3. Your memorialists are credibly informed that the Chinese province of Yunan, distant from British Pegu 250 miles only, is fertile, thickly peopled, and covered with populous cities and towns, connected together, in all directions, by high-roads, navigable rivers, lakes, and canals; besides being bounded on the north by another province, the largest, richest, and most populous in the Chinese Empire, that of Szechuen; and that the Yunan province yields in itself large quantities of various rich commercial products suited to the British and other markets, including the finest descriptions of tea produced in China.

" 4. They, therefore, further desire again respectfully to impress upon your Lordship and the Government the prospect of great and manifold advantages which must eventually result to British industry and enterprise, if a fair opportunity for it is afforded, in the direction pointed out."

That the result of such their second memorial on the subject also not proving satisfactory to your memorialists, they, on the 1st of October 1863, transmitted a third and more earnest appeal to the late Viscount Palmerston, then still the First Lord of Her Majesty's Treasury, to which they beg to be further permitted to refer† your Lordships, and in particular to the following paragraphs, thereof,—

" 3. That the inland western provinces of China proper are undeniably inhabited by a large, industrious, and wealthy population, producing teas, silk, and other articles of the best quality, suitable for European consumption, against which the products of England and India may be very advantageously exchanged.

" 4. That, at present, access to these western Provinces of China is difficult, expensive, and indirect; and, in the opinion of your memorialists, commercial relations with them cannot be beneficially developed until a more suitable route is established.

" 5. That a rail or tramway, from Rangoon to Kiang-Hung, on the Upper Kamboja River, would afford an efficient means of communication between the port of Rangoon and the said provinces.

" 6. That, before such road can be made, a careful survey of the intermediate country is essential—a distance of about 500 miles—with a view to discover the most advantageous route for commercial purposes, the year through.

" 7. Your memorialists, therefore, most respectfully request that instructions may be given to the Indian Government to cause such a survey to be immediately made across British Pegu; and that the King of Burma may be moved to make, or to permit to be made, a similar survey by the same parties, across the south-east of the adjacent tributary Shan States.

" 8. Your

* Parliamentary Paper, "China, No. 5, 1864."

† The same Parliamentary Paper.

"8. Your memorialists would further request that such survey should be entrusted to a competent practised railway engineer, specially instructed to keep in view the advantages of such route for commercial purposes, and for the establishment of telegraphic communication, and its capability of being kept open and used throughout the year."

That in consequence of these memorials, and of others from numerous commercial associations in this country, the then Secretary of State for India, Sir Charles Wood,—“directed the attention of the Governor of India to the subject,”* and on the 13th of September 1862, stated† to the memorialists,—

“That he had recently received a Despatch from the Government of India, saying,—‘that the Chief Commissioner of British Burma had been desired to keep his attention directed to the prospects of trade with Western China, and to avail himself of every favourable opportunity to obtain a knowledge of the different routes which have been suggested for tapping the commerce of China in that quarter.’”

That, nevertheless, on the 12th of May 1862, the then Viceroy and Governor-General of India, the late Earl of Elgin, sent directions‡ to the Chief Commissioner of British Burma to proceed to Mandalay, the new capital of Burma proper, to negotiate a commercial treaty with the King thereof, the instructions for which treaty made no mention whatever of trade with the Shan States, or with the west of China, or of the direct route for the same from Rangoon to Kiang-Hong, but exclusively directed the Chief Commissioner to negotiate for the opening-up of a route across the extreme north of Burma proper, by which “opium should be conveyed—either duty free or on payment of a moderate transit duty”—from Indian territory (Assam) to the extreme north of Yunan; and by which Chinese coolies should also travel from Yunan to the unpeopled districts of Assam, granted by the Bengal Government, to be cleared for tea plantations, &c.

That so instructed specially for Indian objects and interests, the Chief Commissioner proceeded as envoy to Mandalay, and there “prepared and submitted to his Majesty the King of Burma, the draft of the treaty which he, the Chief Commissioner,§ proposed;” and that a treaty of eight articles was thereon agreed to, “which” the envoy himself officially reported, “contained all the points he required;” limiting trade to the Irawadee River route from Rangoon to Mandalay, and thence, *vid* the still more northern town of Bhamo, by land, to the extreme north-west of the Chinese Yunan province, without mention of, or allusion to, the trade with the Shans and south-western Chinese by the short and direct route from Rangoon to the Upper Kamboja River on the south-west frontier of China proper, so generally and earnestly prayed for by the principal bodies of British manufacturers and merchants.

That, if otherwise practicable for general and continuous commerce, as it is not, the great length and other disadvantages for trade between Rangoon and China, of the route specified in that treaty, render it an impracticable one; inasmuch as the length of the Irawadee River portion of it, from Rangoon to Mandalay, is 615 miles, while the further portions by land are, from Mandalay to Bhamo, due north, 160 miles, and from Bhamo, north-easterly, across the snow-capped Black Mountain ranges, to the north-west of Yunan, 220 miles; a total of 1,055 miles from Rangoon to the north-west|| frontier of China; while the land portion of the route, passable only in the short dry season of the year, is then impracticable for any considerable commerce, in consequence of its mountainous and wild character, and the savage nature of the very lawless tribes occupying it.¶

That, if the character of the treaty route was otherwise, and as favourable as it is impracticable for commerce, there is this other great objection to it—viz., that the 275 last miles of the river portion to Mandalay, and the whole 380 miles of its land portion therefrom to China, in all 655 miles, is in the King of Burma's proper territory, and in a direction thereof distant from British authority, from the Shan States, and from the navigable Meikong or Upper Kamboja River frontier of China proper.

That

* Parliamentary Paper, “China, No. 5, 1864.”

† The same Parliamentary Paper.

‡ Parliamentary Paper, 13th May 1864, “Burma Commercial Treaty.”

§ The same Parliamentary Paper.

|| Parliamentary Paper, June 1865, “Rangoon and Western China.”

¶ Parliamentary Paper, 13th May 1864, “Burma Commercial Treaty.”

That the decided superiority of this latter route is clearly shown by the official memorandum and map of Captain J. M. Williams, Assoc. Inst., C.E., and executive engineer for 12 years in British Burma, * on "Railway Communication with Western China and the intermediate Shan States, from the Port of Rangoon in British Burma," from the opening of which "memorandum" your memorialists submit the following passages,—

"For this new commerce in the East, three distinct lines of railway have been suggested; all, however, originating with Captain Sprye, a retired officer of the Indian army, who served several years in Pegu, Martaban, and the Tenasserim Provinces.

"First. His now advocated wholly land route, to commence at Rangoon, and, as indicated by a red line on the annexed map, to follow as straight a course as practicable across the north-east frontier of British Burma, to the Shan city of Kiang-Tung, and thence to the Shan city of Kiang-Hung, on the right bank of the Meikong or Upper Kamboja river.

"This route will be seen to embrace a continuous railway from Rangoon to Kiang-Hung, where the Meikong or Upper Kamboja issues from the south-west frontier of China, and where the now Major-General McLeod, in 1837, reported that river called the Lantsang, within the Chinese frontier, to be, according to his measurement of it in the dry season, 540 feet wide and exceeding 16 feet deep, and 1,600 feet wide and 60 feet deep during the floods. This river, after a southerly course of about 1,200 miles from Kiang-Hung, falls into the ocean through French Cochin-China, at the port of Saigon, &c.

"The distance, in a straight line, between Rangoon and Kiang-Hung is shown by maps to be about 480 miles, the first and most important moiety of which, as having its terminus at the seaboard, is in British territory, and the other portion principally in the two very friendly Burman Shan States of Kiang-Tung and Kiang-Hung."

That that official memorandum,† addressed to the late Secretary of State for India, Sir Charles Wood, and dated the 21st of January 1865, fully examines, in every detail, this direct land route from Rangoon to the Upper Kamboja river, and the other routes by the Irawadee river, Magwè, Mandalay, and Bhamo; and clearly shows the superiority in every point of view, of the first over the others; establishes its perfect practicability; states that, owing to the abundance of good timber and other requisite material along the line, a railway may be there constructed at a less cost than in any part of India; and, after enumerating some of the permanent benefits such a line must confer on British Burma, is thus concluded by Captain Williams,—

"The commercial benefits that must accrue both to British and Indian trade, from such a direct commercial approach from the port of Rangoon to the populous and productive western provinces of China, across our Burman possessions and the adjoining Shan States, is now generally admitted; and has been so fully expatiated on by those conversant with this part of the subject, that any remarks thereon by me would be superfluous; especially as I have drawn up this memorandum solely to show the utter fallacy of the opinion expressed by some, that the most direct, if not the only line by which we can ever hope successfully to establish commercial intercourse with Western China is impracticable; and to show also the many good reasons which exist for a thorough professional survey of the line being now undertaken, and how hopeful are the prospects of the result of such a survey.

"After a very careful consideration, then, of the entire subject, and giving to all the arguments and statements of objectors their full weight, I do not hesitate, in conclusion, to record it as my professional opinion, founded on my own personal knowledge of the features of the country to be traversed, acquired during a service of nearly 12 years in British Burma, that 'the direct land route' finally suggested by Captain Sprye, from Rangoon to Kiang-Hung,

* Parliamentary Paper, June 1865, "Rangoon and Western China."

† The same Parliamentary Paper.

Kiang-Hung, *via* the Takoo Ford of the Salween river and the Shan city of Kiang-Tung, has in no way been shown to be impracticable; but, on the contrary, that what is before me in support of such opinion tends strongly to establish the very reverse—the perfect practicability of the route for a railway. And since a thorough survey of the route cannot be expensive beyond its utility, the vast importance of the object to be obtained is such as fully to warrant the outlay incident to a careful survey, and the submission of the result to the British Government.”

That, additional to these unanswerable reasons for the construction of such a commercial way as shall be capable of being used continuously through the year, independent of the monsoon rains, your memorialists respectfully call the consideration of your Lordships to the important fact that the French have lately established themselves in the three southern sea-coast provinces of Cochin China, through which flow all the mouths of that important Asiatic stream, the Meikong or Kamboja; and that they are rapidly advancing up that river and its valleys to the Kiang-Tung and Kiang-Hung Shan States of Burma, and the adjacent south-west frontier of China—a distance by the river of 1,200 miles from their port of Saigon; while the same Chinese frontier is only about 250 miles from the north-east frontier of British Pegu, those two Shan States forming the intervening country, and their princes, chiefs, and people having long since expressed their earnest desire that the Indian Government should establish a trade with the west of China across their territory, in the execution of which they would render every facility and assistance, and levy no transit duties either way.

That it is of the first importance to the commercial interests of the United Kingdoms, no less than to those of India and British Burma, that in a commerce capable of being so easily opened to them, and admitting of such great extension, British merchants should not be allowed to be superseded, and in fact excluded, by the superior activity in gaining access to it of foreign powers having rival interests.

That the trade of the important manufacturing district represented commercially by your memorialists has been greatly benefited by the opening of ports along the eastern extremity of the Chinese Empire and in Japan; and your memorialists feel confident that equally great advantages must accrue from the establishment of the projected direct commercial intercourse with the Shan States and inland west of China proper.

That the competition which has through late years grown up between the manufacturers of the United Kingdoms and those of other nations, and which is yearly more and more competing with British merchants in all foreign markets, renders it increasingly desirable that Her Majesty's Ministers should take every opportunity to aid in the introduction of British commerce into every new field that can be peacefully opened to it.

Your memorialists therefore again very respectfully and most earnestly pray,

First. That your Lordships will be pleased to take early measures for ensuring that a thorough survey shall be made of the country between Her Majesty's port of Rangoon and the extreme north-east frontier of the provinces of British Pegu and Martaban, in the direction of the Salween river, for the purpose of selecting the best route for a railway between those points.

Second. That such survey may be entrusted to a competent railway engineer of England, of such established reputation as will cause his report to be alike satisfactory to Her Majesty's Government, the Government of India, and the British manufacturing and commercial public interested in this question.

Third. That the necessary steps may be taken by Her Majesty's Government to obtain the sanction and friendly co-operation of the King of Burma and his tributary Shan princes to the continuation of the survey, under the direction of the same engineer, across the Shan States tributary to him, between the above north-east frontier of the British Pegu and Martaban provinces and the Shan city of Kiang-Hung, or such other point on the right bank of the Meikong or Upper Kamboja river as may be found advisable. And

Fourth.

Fourth. That in the arrangement for these surveys, the extensive information which Captain Sprye has, through several years of continued devotion to the subject, manifestly acquired * of the countries through which the surveys will have to be carried, of their rulers and peoples, and of their several interests and dispositions in the matter, may be in some suitable manner availed of by the Government.

And your Memorialists will ever pray.

(signed) *Darnton Lupton*,
President of the Leeds Chamber of Commerce.

MEMORIAL XXXIV.

Chamber of Commerce, Dewsbury,
7 June 1867.

To the Right Honourable the Earl of *Derby*, K.G., First Lord of Her Majesty's Treasury, and the other Cabinet Ministers.

The Memorial of the Dewsbury Chamber of Commerce,

Showeth,

THAT your memorialists represent a large manufacturing and trading population, dwelling in and around Dewsbury, which population is rapidly increasing in the working portion thereof, their maintenance and welfare principally depending on the local manufactories.

That for some time past circumstances beyond the control of your memorialists and those whom they represent having greatly lessened the demand for their goods in all markets, trade therein has become so unusually depressed as to necessitate short-time labour; and that thus the receipts by the hands are considerably diminished, their domestic comforts lessened, and those branches of retail trade which depend upon the full employment of the people are become greatly depressed.

That, among the causes of this now general manufacturing and commercial stagnation, it is manifest to your memorialists that the growing competition of other nations with British manufactures and trade in foreign markets is becoming more and more serious, such competition being very greatly facilitated by the free and large export of British machinery of every kind, and of the newest patterns, to all parts of the world. Additional to which export of machinery, numbers of our most skilled workmen, for superintending its working, are enticed abroad by extraordinary high salaries. And that such working of British-made machinery in foreign countries, under skilled British direction, is further greatly assisted by the free export, also, of British coal for the requisite steam power to keep such machinery in activity.†

That, in the opinion of your memorialists, another principal cause of the depression under which British foreign trade is struggling, is the unduly high rate of duties imposed on British manufactures by some foreign States, and, also, by some of the principal of our own dependencies.

That, while the sale of British goods is by these many means so more and more checked the world over, the yearly increasing steam power of the country, the continuous improvements of machinery, and the ever-advancing enterprise of our capitalists, very greatly augment the nation's producing capability.

That

* Parliamentary Papers of June 1866,—"East India (Shan States, &c.)," of June 1865, "Rangoon and Western China;" and his and his son's many pamphlets, maps, and official writings; continuous since the 24th of March 1852, the date of their first communication to Her Majesty's Ministers on the subject.

† In April 1865, the coal exported was 794,000 tons; in April 1866, 930,000 tons; in April 1867, 830,000 tons. Of those quantities, the deliveries to France were:—In April 1865, 139,000 tons; in April 1866, 141,000 tons; in April 1867, 172,000 tons; and during the first four months of each of those three years, the export of coal to France was—For 1865, 501,000 tons; 1866, 576,000 tons; and 1867, 657,000 tons.

That, as the before-named obstructions to advantageous trade with many of the existing foreign and colonial markets cannot be removed, and as the national power of production will continue to increase, your memorialists deem it of the first importance to the manufacturers and merchants of the United Kingdom generally, and to the large portion of the people thereof who are dependent upon the manufacturing prosperity of the country, that every new foreign market that can be opened by Her Majesty's Government, in friendly arrangements with other Governments, in all the different quarters of the world, should be promptly made accessible to the enterprise of British merchants; and this,—“not solely with a view to the commercial advantages of the country, and the material benefit of the people generally, but as promoting, also, that wholesome improvement of the public revenue which proceeds from the continued prosperous employment of the people; such employment being the only sure foundation for progress in the consuming power of the country, as this is the only safe foundation for a national income.”

That on these accounts your memorialists have viewed with interest the appeals that have for several years been made to the Ministers of the Crown, and are continuing to be made to your Lordship and different members of your Government, to cause to be opened from the port of Rangoon, in the Bay of Bengal, the new trade with the Shan States and the inland Western Provinces of China, which has been now, for many years, submitted to successive Ministers, by Captain Richard Spyre and his son; supported, in a very unusual degree, by memorials to different Ministers from the principal manufacturing and commercial bodies in the kingdom.

That the Parliamentary Papers, “China, O. 77,” presented to the House of Commons on the 7th of March 1864, and “Burma Commercial Treaty,” presented to the same House on the 13th of May in the same year, show that, between the months of June 1860 and February 1864, 26 memorials on this subject were sent up to successive First Lords of Her Majesty's Treasury, Presidents of the Board of Trade, and Secretaries of State for Foreign Affairs and for India, viz.: by the Chambers of Commerce of Bradford, Bristol, Glasgow, Gloucester, and Halifax—each one; the Huddersfield, and the Cheshire and Worcestershire Salt Chambers—each two; the Chamber of Leeds, Liverpool, and Manchester—each three; the Liverpool East India and China Association—five; the Liverpool Shipowners' Association—two; and the Manchester Cotton Supply Association—one; all of them praying ministerial consideration of the proposition for the peaceable establishment of direct and regular trade with the Shans and Western Chinese, and that the requisite steps might be taken for its early realisation.

That the ministerial answers, as appearing in the same Parliamentary Papers, to that unusual series of memorials in support of Captain and Mr. Spyre's efforts so to carry the foreign trade of England and India into extensive, productive, and populous new fields, appear to your memorialists to have been, in each case, most unsatisfactory; particularly those which issued from the Foreign and India Offices, the latter more especially. And that your memorialists observed, with great disappointment, that throughout the Governments of Lord Palmerston and Russell, no step was taken by any department of State towards opening the trade so greatly needed and so earnestly prayed for by the general manufacturing, commercial, and shipping interests of the country.

That your memorialists have before them a printed copy of a Paper which was read on the subject by Captain and Mr. Spyre to the Royal Geographical Society, so long back as the year 1860, and printed by them, with a large explanatory map, in 1862, as their “Western China Trade” Pamphlet vi. This paper appears to your memorialists to contain very much new and instructive information, geographical and mercantile, of the Shan States and western inland moiety of China; fully justifying the commercial views of its authors, and their then earnest recommendation that a direct trade should be opened up with that important portion of interior Asia, by a rail or tramway from Rangoon. Many passages of the paper are worthy of being embodied in this appeal to your Lordship and Her Majesty's Ministers, but your memorialists will obtrude only two short ones, as showing how clearly their authors exhibited, at that long-back date, the desirability of Government action towards opening the new trade fields in question to British and Indian mercantile enterprise. After showing, on undeniable authorities, that the inland western moiety of China, within about 250 miles of our Pegu frontier, contained 600,000 square miles of territory, with upwards

of one hundred millions of people exclusive of the mountain population, 70 cities of the first order, 400 of the second and third orders, with a proportionate cultivated area, Captain and Mr. Sprye observed,—

“These are geographical and statistical facts, or they are not. We are not the authors of them, any more than of the descriptions we have given you of this extensive and rich portion of the inhabited world. If they are truths, as we consider they are, can it be out of place, in these days of universal progress, of manufacturing and commercial enterprise, and need of new fields for it, to inquire what trading intercourse exists between our own country and such a rich land for the extension of the British and Indian foreign trades? And should the reply be that there is no British or Indian commercial or other intercourse with those very extensive, productive, and thickly-peopled portions of the globe, can it be presumptuous in us, looking to the increased and increasing numbers of our population who are wholly dependent for their daily sustenance on the prosperous activity of our manufactures of every description, and looking, also, to the increasing foreign competition our manufacturers have to contend against in every existing market for their goods; looking, we say, at these too manifest facts, can it be presumptuous in us to inquire of our Rulers,—Why is this? or wrong in us to endeavour, by the spread of the information which we have through long years of distant service and travel collected on the subject, to open to our country and to India the boundless new commerce which this hitherto sealed-up moiety of China proper is capable of yielding, if a direct, easy, and safe commercial way be opened to it? By our annexation, in 1852, of the two additional Burman provinces of Pegu and Martaban, our rulers have for eight years possessed, as they still possess, the power, under amicable arrangement through our own Sovereign with the King of Ava, to open such a commercial way; if, in this era of unprecedented war expenditure in time of peace, Her Majesty's Ministers can be sufficiently impressed with the importance of the nation's commercial interests to inform themselves correctly on this new trade proposition.

“Le Compte, in writing his epistolary history of China, a century and a half since, stated in one of his letters ‘that the scientific men of France had found China to be 500 leagues nearer to Europe than it had, up to then, been considered to be; and that if succeeding observing navigators could but bring it each voyage as many leagues nearer, voyages to it would, in time, become shortened indeed. But the misfortune is, that this is out of their power.’

“Yet the proposition we now submit to your notice is—still more to shorten the distance between England and China full one half, and that between India and China far more than one-half; and this by opening a new and short ‘way’ for the products and goods of Great Britain and Hindostan, to be conveyed to a full moiety of the Chinese Empire which has hitherto been, and continues unnecessarily to be kept, inaccessible to the merchants of England and India.”

That your memorialists have also before them a printed copy of an official letter on the subject, from the same gentlemen to the then Secretary of State for India, Sir Charles Wood, dated the 20th of January 1862; and as that letter more clearly shows the great and permanent benefits the realisation of their proposition must bring to British India generally, and to the Burman portion of it in particular, as well as to the manufacturing and commercial interests of England, your memorialists the more regret the neglect of the subject by the Government of India, and beg to refer your Lordship and your colleagues in the Ministry to that official document, as containing much new and also sound information respecting the commercial advantages offered to India by British Burma's proximity to the Shan States and West of China, if it be properly availed of.

That your memorialists feel the greater disappointment that Her Majesty's Ministers should have responded so very indifferently to such appeals to them from the manufacturing districts to open up trade with a large extent of the interior of Eastern Asia, represented to contain close upon 200 millions of industrious and enterprising people, because your memorialists have also before them the Parliamentary Paper “Rangoon and Western China, 373, of

1865;” being an official report, with explanatory map, dated the 21st of January 1865, addressed to the same late Secretary of State for India, by Captain J. M. Williams, Associate, C.E. and Executive Engineer in British Burma, where he had served 12 years, and was still serving; which memorandum strongly advocates Captain and Mr. Sprye’s commercial railway proposition, shows its perfect practicability in an engineering point of view, with many and great local facilities for its economical accomplishment, and fully confirms the opinions expressed by Captain and Mr. Sprye, in their pamphlets herein referred to, to quote Captain Williams’s words, “as to the commercial benefits that must accrue both to British and British-Indian trade by such a direct commercial approach to the very populous and productive Western Provinces of China, across our Burman possessions and the adjoining Shan States.”

That your memorialists have further before them, on this subject, the Parliamentary Paper, “East India (Shan States, &c.) No. 350, Session 1866,” being copy of another letter from Captain and Mr. Sprye, dated the 15th of January 1866, to the then Secretary of State for India in Council; many parts of which document your memorialists venture to think merit the now serious consideration of Her Majesty’s Government, especially paragraphs 23 to 31, 34 to 36, and 39 to 62, detailing French and Russian progress in Eastern Asia.

That such having been the unsatisfactory course of the Home and Indian Governments for the year 1858,* your memorialists are much gratified to see that the leading manufacturing and commercial bodies of Yorkshire and Lancashire have resumed addressing Her Majesty’s Ministers on the important subject; and to learn that seven further memorials, more earnest than the 26 previous ones, have been at different dates since June 1866 transmitted to your Lordship and to your colleagues the Secretaries of State for Foreign Affairs and for India, viz., from the Leeds, Bradford, Halifax, Huddersfield, Liverpool, and Manchester Chambers of Commerce; and from the Liverpool East India and China Association. And that your memorialists, having also before them copies of these seven more recent memorials, beg respectfully to say that they cordially concur in their several statements and prayers; and in none thereof more so than in those which refer to the long and persevering labours of Captain Sprye and his late son to obtain for England and India the benefits of this all-important new Asiatic trade, and which recommended those gentlemen to your Lordship’s favourable notice, as, in the opinion of the memorialists, most competent to arrange plans for its peaceful attainment, and to ensure their being rightly carried out.

That, though your memorialists have reason to believe, as above stated, that the indifference and hostility hitherto so effectively shown to this project, principally proceeded from the Foreign and India Offices, they are not without grounds for considering,† as they hope may be the case, that the Government of India, or rather the Calcutta portion of it, is the now principal opponent to the measure. But your memorialists are unable to learn or imagine any sound or satisfactory reason for such hostility on the part of the authorities in India. For though your memorialists are aware, in common with the general public, that owing to the large armies and costly military establishments at present maintained in India, and the very lengthened neglect which cultivation and exterior trade have there experienced, the expenditure of that Government exceeds the revenue of the country, they consider such insufficiency of public income to form a cogent reason why the Indian Government, instead of persevering to oppose and retard, should promptly encourage and readily assist the peaceful establishment of regular commerce with all the countries and peoples around India that can be made accessible to British and Indian merchants and their merchandise, by means of canals, railways, and roads, in every desirable direction where such reproductive works are practicable, at fair cost, though the return may not promise to be immediately remunerative.

That your memorialists venture also to express the opinion that, as respects the Indian portion of Her Majesty’s Empire, a policy of honourable peace and friendly intercourse with every still remaining native power; of active encouragement of extended and improved cultivation, and of zealous promotion of interior trade

* Printed Papers show that the project was first submitted to Her Majesty’s Government by Captain Sprye in 1858.

† Parliamentary Paper, “Rangoon and Western China, No. 233, Session 1867.”

trade and exterior commerce by constructing the ways to make such trade and commerce practicable, must quickly augment the Indian revenue, and eventually enable that Government to enter upon the still greater and higher duties of reducing undue taxation, improving the material and mental condition of the people, and thereby rendering them happy under and contented with the rule to which they have become subject; for such a system of improved peaceable rule over India cannot fail, in the opinion of your memorialists, to admit of a progressive and safe, yet very considerable reduction of that immense military establishment, the existence of which, and the wars it has encouraged have, in addition to eating up all the resources of the country, entailed a debt exceeding 110,000,000 £. sterling, and withdrawn the minds of successive Governors General from the greater advantages of State expenditure on peaceful reproductive works, such as, instead of exhausting, tend to fill the public treasury. And here your memorialists may not improperly bring to the notice of Her Majesty's Government, that the railways which have been as yet constructed and sanctioned in India are considered to have had the support of the Indian Government more as forming ways for the rapid and economical transport of troops and military equipments and supplies of every description, and, thereby, to be sources of considerable saving to that Government; rather than as ways by which the commercial products of the country should be readily and cheaply conveyed to the sea coast for export, and imported goods be similarly conveyed for distribution over the general interior of that vast and populous portion of Her Majesty's empire.

That, as regards the project for direct commerce with the Shans and western Chinese by railway from Rangoon, your memorialists, after having very fully and carefully considered it, are satisfied that India, as well as England, and, therefore, the Government of India, must benefit very largely from its realisation; seeing that, without taking into account the rich and well-peopled intervening Shan States, the extent, cultivation, and population of the six most Western Provinces of China to be so commercially opened to India and England, was, according to an Imperial census of 40 years back, as follows:

Area	-	-	-	-	551,773 square miles.
Population	-	-	-	-	93,651,778 „
Land cultivated	-	-	-	-	53,438,822 „
Cities of the first order	-	-	-	-	61 „
Cities of the second and third order	-	-	-	-	367 „

That the two most western of those six provinces, and, consequently, the nearest to British Burma, viz., Yunan and Szechuen, contain exceeding thirty-eight millions of people! and are known to yield, with numerous other valuable products, gold, silver, mercury, cinnabar, vermilion, copper, iron, and coal; tea and silk; wool and goat's hair; sables and other furs; wheat, rice, and millet; rhubarb and other valuable drugs; indigo and other dyes; insect wax, beeswax, the tallow and oil trees, and petroleum; honey, cinnamon, lemons, oranges, and pomegranates; variegated marbles of great beauty; horses and mules; skins and hides; the grass-cloth or rheea-plant; jute, and other textile fibres;—products which it is but natural to consider would be provided in any quantities necessary to pay for British and Indian goods, suited both to the people of the cold north and to those of the warmer south of the empire, as also to their still more northern and southern neighbours, to whom Chinese traders would actively convey them.

That the late accomplished Chinese scholar and observing Asiatic traveller, the Abbé Hue, in his published account of his journey from L'hasa, the capital of Tibet, to Canton, describes the western Chinese as most enterprising traders, carrying on an active overland commerce with the people of Tibet, Tartary, &c.; proofs of which he gives in his description of the Chinese caravans he met crossing even the most lofty and difficult mountain ranges of south-eastern Tibet.

That your memorialists are therefore fully justified in considering that the goods principally manufactured in and around Dewsbury, together with those made in many other parts of England, would be sure of a large and continuous demand if regularly, quickly, and cheaply conveyed from Rangoon to the Upper Kamboja River, on the frontier of the Yunan province of China proper; at which point, distant by the stream 1,240 miles from the sea, that river was found by McLeod sufficiently wide and deep, even in the driest season, for deeply laden

junks to pass up as well as down it.* And in support of the belief here expressed, your memorialists respectfully remind your Lordship and your colleagues of the Cabinet, of the very great commercial advantages which have been reaped, the world over, by the establishment of railway communication between two distant points; though these have not possessed such a fine port as Rangoon at the one terminus, or at the other the extensive, rich, and populous provinces of western China, with such a rich country as the Shan States between them.

That your memorialists have been credibly informed that the official report which Captain McLeod Assistant Commissioner at Moulmyen, made to the Government of India, of his mission, in 1836-37, to the Burman Shan States of Kiang-Tung and Kiang-Hung, and the west of China, records that the ruling princes of those two Shan States, their Ministers, chiefs, and people, received him with the most marked cordiality and rejoicing, gave their ready concurrence to the opening of a commercial way from the British Burman frontier to China across their States, and even through their capitals, proffered every facility and assistance they and their people could render to the work, promised that British merchandise should pass to and fro through their territories free of transit duty, and declared that everything their countries produced should be at the disposal of our merchants, excepting only women and children for sale into slavery, for which cruel purpose Siamese marauders carried them off from the adjacent Shan and Karen States.

That the same official report informed the Government of India, full 30 years since, that the Chinese officials, merchants, and people, on that frontier of China, expressed even a more anxious desire that British merchants should come up and establish trade with them from our Burman ports; and affirmed that our merchants would be at all times free to enter that part of China with their merchandise, to carry it and dispose of it where they liked, and to take out of China, with similar freedom, whatever of Chinese products they might choose.

That, as similar statements and assurances were officially reported, years previously, to have been given to the late Dr. Richardson—who was also an Assistant Commissioner in British Burma—by the numerous Chinese he met in his several missions to the princes of different other Siamese and Burman Shan States, travelling as merchants with large caravans or as separate traders, over the Siamese Shan States of Zimmé, Labong, and Lagong, and the Burman Shan States of Mobyé, Mokmé, and Moné, no doubt can be rightly entertained but that the authorities and people of Western China, and of the Shan States between them and British Burma, will cordially hail, encourage, and promote the projected direct railway union of their countries with the port of Rangoon.

That almost the whole of the 33 memorials before referred to as having been addressed to Her Majesty's Ministers, by different Chambers of Commerce, in support of the opening of this promising new trade, have prayed, "That a thorough and perfectly reliable survey may be made of that direct land route by practised civil engineers, under the direction of some eminent railway engineer of England, on whose work and report Her Majesty's Government, the Government of India, and the manufacturing and commercial interests of both countries should be able to rely."

That, in common with those other Chambers of the kingdom, your memorialists feel greatly disappointed that no such professional survey, under such competent guidance, has yet been ordered by Her Majesty's Government; while the Indian Government has been expending, and is still expending, large sums, even more it is considered than the survey prayed for would cost, in sending different civil, military, and naval officers,† mostly ignorant of railway surveying and construction, on various profitless exploring expeditions of other routes, towards other points of the west of China, such as were well known to be impracticable for commerce; because this was manifest to every man of reflection, in the fact that no Shan or Chinese trader or traveller had, at any period, made use of them.

That under these thus far disappointing circumstances, and seeing that seven years have been so permitted by the Indian Government to pass uselessly away since the first of the 33 memorials was sent up, viz., the one to Viscount Palmerston,

* The French have taken possession of all the mouths of that noble stream in the Sea of China.

† The late Deputy-Commissioner O'Riley; Lieutenant C. E. Watson, of the Artillery of India; Lieutenant G. S. Sconce, of the Indian Navy; and Mr. Francis Fedden, of the Geological Department of India.

ston, First Lord of Her Majesty's Treasury, from the Manchester Chamber of Commerce, dated the 12th of July 1860, your memorialists have been induced to enter into these more full details, and now beg most respectfully and very earnestly to pray—

That your Lordship's Government will be pleased peremptorily to instruct the Secretary of State for India to adopt the necessary measures to ensure that such a professional survey shall be entered upon at the commencement of the coming dry season in British Burma, viz., in November of the present year, under the direction and superintendence of an English railway engineer-in-chief, on whose report, plans, and estimates all parties interested shall be able to rely.

That such English railway engineer may be instructed to conduct the survey so as to ascertain the best and shortest route for railway communication for commercial purposes the year through, between Rangoon and the Upper Kamboja river, on the south-west of China proper.

That Her Majesty's Secretary of State for India may be also instructed to enter into direct diplomatic communication with his Majesty the King of Ava, through an envoy of becoming civil rank from the Queen;* and to negotiate with him, as he is said to desire, in the name of her Majesty, for his co-operation; and for the requisite cession, on equitable terms, of a right of way across such portion of his tributary Shan States as may have to be surveyed, and across which the line may have to be carried.

That, for the greater satisfaction of the manufacturing and commercial interests, and as some acknowledgment due to the long and zealous devotion of Captain Sprye and his late son to the cause of benefitting India and England by the peaceful establishment of a permanent trade between him and the Shans and West of China, the Secretary of State for India may be further requested to avail himself of that officer's personal knowledge, acquired information, and apparently well-matured views on the subject generally.

That the Government of India may be directed to render every facility and all the aid in its power to Her Majesty's Envoy to the King of Ava, towards the effective execution of his mission, as also to those who may be employed on the survey; and to instruct the Chief Commissioner of British Burma to act in all ways towards those employed in this service so as best to promote their right progress with it, in such manner as shall be most in accord with the object sought, and most effectual.

And your memorialists will ever pray.

(signed) *Philip Ellis, President.*
Jesse Smith, Secretary.

MEMORIAL XXXV.

Liverpool, 12 (or 22) June 1867.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury.

The Memorial of the Liverpool Shipowners' Association,

Showeth,

That on the 29th of October 1862 your memorialists, in common with the principal commercial chambers of the kingdom, memorialised Her Majesty's Government in favour of the opening up of direct trade with the inland western moiety of the Chinese Empire from the British port of Rangoon.

That on the 23rd of September 1863 your memorialists addressed another memorial

* The late King of the French, Louis Philippe, and the present Emperor of the French, have not objected to enter into direct diplomatic intercourse with the Ava monarch.

memorial to Viscount Palmerston, then the First Lord of the Treasury, referring to their said previous memorial and to the treaty of commerce then recently entered into, in Her Majesty's behalf, between the King of Burma and Her Majesty's Viceroy of India, and stating, "That to make such treaty available, your memorialists believed it necessary that a commercial road should be made, by the most direct practicable route, from Rangoon to Kiang-Hung;" and therefore respectfully praying "that Her Majesty's Government would be pleased to cause a survey to be made, to ascertain the best route for the conveyance of merchandise between those points; and that such survey might be conducted by some well-known and approved engineer, to ensure as far as possible the selection of the best route."

That in reply to such second memorial the Secretary of State for India, Sir Charles Wood, on the 16th of October 1863, wrote to your memorialists, stating "that the Government of India have been instructed to report on the best means to be adopted for developing the resources and improving the inter-communications of British Burma; and that pending the receipt of their report, he was not prepared to issue any further or more specific orders on the subject."

That your memorialists have not been favoured with any subsequent communication thereon from any department of the Government.

That your memorialists, being aware that the chambers of commerce of the kingdom are again moving Her Majesty's Government to take this important, yet long standing, Western China trade question into their earnest and favourable consideration, desire to support the renewed efforts of those chambers by also respectfully repeating to your Lordships their prayer,—

That Her Majesty's Government will be now pleased to order such a professional survey to be made during the dry season, which commences in November next, of the country from Rangoon to the right bank of the Upper Kamboja river, in the Shan State of Kiang-Hung, to ascertain the most direct and practicable line for a railway or tramway to be laid by which merchandise may be conveyed between those two points throughout the year.

That the Government of India may be instructed to render to such engineer-in-chief every assistance in its power to facilitate such survey.

And your memorialists will ever pray.

(signed) *W. T. Jacob*, Chairman.

MEMORIAL XXXVI.

To the Right Honourable the Earl of Derby, K.G., First Lord, and the other Lords of Her Majesty's Treasury.

My Lords,

Chamber of Commerce, Batley,
20 June 1867.

By direction of the Batley Chamber of Commerce, I have the honour to forward to your Lordships a memorial praying that effective steps may now be taken by Her Majesty's Government for opening the long-projected new trade with the Shans and Western Chinese from the port of Rangoon.

The Chamber beg leave to avail of the opportunity respectfully to bring to the notice of your Lordships the persevering and zealous manner in which this trade with an extensive and populous portion of the interior of Asia, as yet unknown to British merchants, has been for many years advocated by Captain Richard Sprye, the original projector of it, and his lately deceased son, Mr. R. H. F. Sprye. And, in reference to those continued efforts of individuals peacefully to promote the commercial intercourse of England and India with other rich countries, the Chamber feel it their duty to add, with every deference to your Lordships, that, in common with the other commercial bodies of the West Riding who have addressed Her Majesty's Government in favour of the project, they will be much gratified

gratified to see Captain Sprye's full knowledge of the subject availed of in whatever arrangements may be made for the desired and requisite professional survey of the route, and in whatever other measures may be adopted peaceably to establish the much-needed new trade.

I have, &c.
(signed) *Mathew J. Scholefield*, Secretary.

Chamber of Commerce, Batley, 20 June 1867.

To the Right Honourable the Earl of Derby, K.G., First Lord, and the other Lords of Her Majesty's Treasury.

The Memorial of the Batley Chamber of Commerce,

Showeth,

THAT your memorialists have observed with considerable interest, through some years past, the numerous appeals which have been made to Her Majesty's Government by the Chambers of Commerce and manufacturing and mercantile associations of the kingdom, for the peaceful establishment of trade with the inland Western Provinces of China proper, from the port of Rangoon, across the Shan States of Kiang-Tung and Kiang-Hung.

That by the two Parliamentary papers, "China No. 5," and "Burma Commercial Treaty," both of the Session 1864, your memorialists became cognisant of 26 such appeals, addressed to Her Majesty's Ministers for the time being, during the years 1860, 1861, 1862, and 1863, by the Chambers of Commerce of Bradford, Bristol, Glasgow, Gloucester, Halifax, Huddersfield, Leeds, Liverpool, and Manchester; the East India and China Associations of Liverpool and London; the Lancashire Cotton Supply Association; and the Salt Chamber of Cheshire and Worcestershire; several of which bodies sent up two memorials each; others, including the Leeds, Liverpool, and Manchester Chambers, three each; and the Liverpool, East India, and China Association even so many as four.

That, inasmuch as the answers sent to the more recent of those memorials by Her Majesty's then Secretary of State for India, Sir Charles Wood, now Viscount Halifax, as set out in the first of the Parliamentary Papers before referred to, stated, "That the Government of India had been instructed to report on the best means to be adopted for developing the resources and improving the inter-communication of British Burmah;" your memorialists forebore to address Her Majesty's Government on the subject until such report should be received.

That, as the subsequent Parliamentary Paper, "Rangoon and Western China, 373, Session 1865," which is an official "Memorandum, addressed on the 21st of January of that year, to Sir Charles Wood, Secretary of State for India, by Captain J. M. Williams, Inspector of Public Works, Rangoon Division, British Burmah, upon railway communication between Rangoon and Western China, with map relating thereto," very clearly showed the practicability and the desirability, in a commercial point of view, of such a direct railway junction of that British port with the Upper Kamboja river, on the south-west frontier of China proper. Your Lordships' memorialists, in common with the other manufacturing and commercial interests of the country, have anxiously expected to hear that Her Majesty's Government had taken the necessary steps, through the Government of India, to meet the prayer of the many memorialising bodies,—"That an English railway engineer of acknowledged position among the civil engineers of this country, should be appointed by the Secretary of State for India, to survey the route recommended by Captain and Mr. Sprye, for the commercial way in question."

That no such steps having, however, been taken by the late Governments, in deference to the numerous memorials to them from the leading commercial bodies of the kingdom, your memorialists have been much gratified to see that the principal Chambers of Commerce of Yorkshire and Lancashire (the districts most interested in the opening of the trade in question) have resumed their efforts for its accomplishment by addressing still further memorials in its favour to Her Majesty's present Government.

That the projected commercial approach to the extensive and rich inland portion of Eastern Asia which has been hitherto shut in from trade with other countries, and which is only now accessible to England and India through our possessing the Burman province of Pegu, with its fine port of Rangoon, cannot fail, in the opinion of your Lordships' memorialists, to prove of great and lasting benefit to the manufacturers, merchants, and shipowners of England and India; and, by reflection, to the people generally of those of the principal parts of Her Majesty's empire, as well as to the Home and Indian Governments.

That the present prohibitory tariffs of the United States of America have shut out from your Lordships' memorialists a market which formerly was greater than any other for their manufactures; and your memorialists are, therefore, compelled to seek other markets for the manufactures of the district to prevent their progressive decay.

That, in a further Parliamentary Paper on this question, "East India (Shan States, &c.) 350, Session 1866," being one of the official letters on the subject, from Captain and Mr. Sprye to the Secretary of State for India, dated the 15th of January 1866, it is shown that the opening of the trade in question has been for many years strongly recommended to the Indian Government by several other of its civil and military servants; who, in course of their duties in British Burma, have had to travel over and report upon different parts of the countries embraced by this project, between Rangoon and the Chinese frontier.

That, in support of this statement, your memorialists beg to submit a paragraph from page 34 of the last-mentioned Parliamentary Paper, wherein Captain and Mr. Sprye observed to the Secretary of State for India in Council—

"In considering this point, Sir, it is desirable to bear in mind what we will here repeat to you: that both Richardson and McLeod were invariably assured by all the Chinese officials and caravan traders they met in their different missions to different Shan States and the West of China, 'that our merchants would be welcomed by their countrymen of all classes, that no duties would be levied on their goods, and that they would be free to enter and leave China at their pleasure, as the frontier towns were open to all traders, and had no guards set against them.'

"We quote to you, Sir, the official statements of those travellers on Government missions, and of the more recent one, the late Deputy Commissioner of Pegu, Mr. O'Riley, on this point, as follows:—

"Richardson, in 1835, wrote to the Indian Government,—

"I need not descant upon the great importance to England and India, of opening a trade to the south-west frontier of China for British and Indian goods and Chinese products. I learnt from the caravans I met of Chinese traders, and from other authorities during my travels, that no difficulty will exist in our merchants visiting the frontier towns of the Yunan province; and all the Chinese assured me there were no guards and no restrictions on merchants.'

"McLeod, in 1837, wrote to the Indian Government,—

"The ministers and chiefs of Kiang-Tung and Kiang-Hung pressed me much to send merchants up. The subject is, therefore, worthy the attention of Government, and advantage ought to be taken of the good understanding now established; and trading parties should be pushed up to Kiang-Hung, if only to show the Chinese, in particular, that commerce with them is truly our object. Now that we find this Shan State of Kiang-Hung, which is so closely allied to Western China in position and inclination, as well as the body of the Chinese merchants, willing and anxious to promote such a commercial intercourse with us, our main object should be to make an effort, even at some cost to Government, to establish a permanent trade with them.'

"And in the more recent year, 1861, O'Riley, in reference to our proposition that, at first, a station and emporium for trade should be formed on the Pegu extreme north-east frontier, in the direction of Kiang-Tung, wrote to the Government of India,—

"There are many considerations that induce a well-grounded opinion of the eminent capacity of the locality to be made an emporium of trade of the first importance.

importance. Surrounded on all sides by nations whose commercial enterprise forms the prominent feature of their character, to whom neither ranges of mountains nor rushing streams oppose a barrier to the progress of trade; possessing within itself a numerous and comparatively wealthy population, the Karens and Shans, eager to a degree to possess the products of our manufactories, and favoured by nature with a position and climate propitious to the development of many valuable resources, the period could not be far distant when such an emporium would carry our commerce through regions hitherto closed against our merchants and their enterprise; regions where it would be more appreciated than in any other part of the world, the Western Provinces proper of the mighty Chinese empire."

That in the still more recent Parliamentary Paper on this long projected new Asiatic trade, "Rangoon and Western China, 233, of the present Session," being "Further Correspondence between the Secretary of State for India and the Indian Government, on the proposed Commercial Communication between Rangoon and Western China," your memorialists observe the following extracts from the Administration Report of British Burma, by its Chief Commissioner, for the year 1865-66; which fully confirm, on that high authority, the sentiments expressed on the subject so many years before by Captain Sprye and the above-named three officers serving in that Commission:—

"Paragraph 72. To the eastward of Burma lies the country of the Shans, a people divided into numerous clans, each under an independent chief. It is this political separation, and the mutual jealousies of the several States, which render them unable to resist the Burman power. The people are industrious and energetic; they long for self-government and free trade; and they possess a marvellous capacity for travelling as petty traders. Placed in a country having no great navigable river—for the Salween is full of rocks, rapids, and falls throughout its course—all their trade is carried on by land. They have no carts, but carry their goods, for hundreds of miles, on the backs of bullocks, or on their own shoulders. They come yearly in large numbers to British Burma. A road, whether railway or other, which should pass from Rangoon through Shan land and touch China, would extend commerce with this enterprising people, and bring the Chinese products of Yunnan direct to British Burma.

"73.—Considering that the population of British Burma is not more than two millions and a quarter of souls, and that the means of traffic with adjoining countries, except by the line of the Irawadee river, are merely by bullock carriage over unmade tracks, the value of the import and export trade is very large; and it speaks well for the consuming and producing capacities of the people, that their consumption of the textile fabrics of Europe is proportionately greater than that of any Indian presidency. The importance of facilitating commerce with such a people is self-evident."

That your memorialists deem it also appropriate to bring to the notice of your Lordships, from the same recent Parliamentary Paper, the following two paragraphs of an official letter from the same Chief Commissioner of British Burma, to the present Viceroy and Governor General of India in Council, dated Rangoon, 22nd October 1866:—

"Paragraph 6.—Notwithstanding the difficulties which I think may have to be encountered in constructing a railway, the national interests involved in opening out, or endeavouring to open out, direct commercial communication between Rangoon and Western China, are so vast, that I consider a surveying party should be sent to explore and roughly survey the proposed route.

"9.—As regards the mercantile community in British Burma, they are most anxious to have the communication established. It is naturally felt that it would raise Rangoon, in a few years, to a level with Calcutta and Bombay."

That your Lordships' memorialists have, therefore, observed with regret, in the same Parliamentary Paper, page 11, the marked hostility expressed by the Viceroy and Governor General of India in Council—in his letter to Lord Cranborne, the late Secretary of State for India, dated 8th December 1866—

to a project so long and so earnestly desired by the manufacturing and commercial interests of the United Kingdom; and the realisation of which project there is, in the Parliamentary and other printed papers before them, so very much to prove, must equally, if not in a greater degree, benefit India and its Government—the British Burman division thereof more especially. And your memorialists feel impelled to submit to your Lordships hereon, that, in the reasons offered by the Viceroy and Governor General in Council, in support of such hostility, they can see nothing differing from the reasons which were persistently assigned by the Government of India for that erroneous and injurious policy which so long opposed the opening of the Indian trade, and the overland route to India; and as unwisely deferred the introduction into that country of railways and other improvements of this century, which are now happily seen to produce great and yearly increasing benefits to both the Government and the people of India.

That the Minute of “Dissent” by two members of the Council of the Secretary of State for India, to Lord Cranbourne’s admirable letter of the 7th of February last, to the Government of India, dated also the 7th and 8th February 1867, and which dissenting Minute, as placed in the same Parliamentary Paper, appears to your memorialists, from a consideration of the other official documents before them relating to the project, to be without any sound foundation, and in no degree justified by the facts of the case.

That, as manufacturers and merchants, your memorialists venture to consider that deference should rather be paid, in the present case, to the statements and opinions of those others who, no doubt at great sacrifices to themselves, have made “Trade with the Shans and Western Chinese, from Rangoon” the study of the best parts of their lives, as in the case of Captain Sprye and his late son; and who must have thus acquired personal knowledge, with other reliable information, of the countries and peoples to be affected by it. And thus considering this point, your memorialists respectfully submit to your Lordships three other pertinent paragraphs from the Parliamentary Paper, “East India (Shan States, &c.),” before quoted from. At page 9 of that document, Captain and Mr. Sprye observed to the Secretary of State for India in Council, Sir Charles Wood—

“Paragraph 12.—We venture to affirm, Sir, that no railway as yet constructed in India, or being now there constructed, will eventually prove so beneficial to India generally, and in particular to the provinces through which it will pass, viz., those of British Burma, as will this proposed line from Rangoon to the Upper Kamboja river.

“14.—We equally affirm, that not a railway in India has been so long and so earnestly advocated and generally called for by the manufacturing, shipping, and mercantile interests of the United Kingdoms.

“14. And we may no less confidently affirm, that no efficient line has been constructed in India, in Europe, or in America, at so little cost as may be the line in question, if properly undertaken and carried out. Our belief in this is amply supported by the official Memorandum transmitted to you on the 21st of January last by Captain J. M. Williams, Assoc. Inst. C.E., and Executive Engineer of the Rangoon division of British Burma.”

That your Lordships’ memorialists have also had opportunity of reading the several fresh memorials which have been addressed to your Lordships and to others of Her Majesty’s present Ministers on this subject, by the Chambers of Leeds, Bradford, Halifax, Huddersfield, Manchester, Liverpool, &c.; and beg respectfully to state that they generally concur in the sentiments therein expressed, and most earnestly pray as follows:—

That the Secretary of State for India may be instructed by Her Majesty’s Government to select a railway engineer of eminence in England, to conduct an efficient professional survey of the route between Rangoon and the Upper Kamboja river, in the Kiang-Hung Shan State, on the south-west frontier of China proper, in order to ascertain the most direct and easy line by which that port and that river may be connected by rail or tramway for the conduct of commerce between them, the year through, independent of the monsoon rains.

That

That the Government of India may be instructed to render every assistance to such engineer in the execution of the survey, by placing at his disposal for the time the services of Captain J. M. Williams, and any other of its servants in British Burma, whose knowledge of the country and people may be likely to help forward the survey; and by facilitating the work in all other ways for its right progress.

That Her Majesty's Government will be pleased to gratify the long-expressed and but natural desire of the King of Burma, to have a complimentary envoy of civilian rank sent to him from Her Majesty the Queen; and that such envoy may be instructed to avail of any proper opportunity for ascertaining the views of his Majesty and his Government in reference to a concession, on equitable terms, of a right of way, under British protection, for the proposed rail or tramway, by whatever route across the Shan States the survey may show to be the most eligible for directness and economy of construction.

That the engineer selected by the Secretary of State for India to conduct the survey may be directed to make a detailed report thereof to Her Majesty's and the Indian Government, supported with the usual plans and estimates; and that such report may be presented to Parliament at the earliest possible time.

And your Lordships' memorialists will ever pray.

On behalf of the Batley Chamber of Commerce.

(signed) *John Jubb*, President of the Chamber.
Mathew J. Scholefield, Secretary.

MEMORIAL XXXVII.

Salt Chamber of Commerce, Northwich,
5 July 1867.

To the Right Honourable the Earl of Derby, K.G., First Lord of Her Majesty's Treasury.

The Memorial of the Salt Chamber of Commerce of Cheshire and
Worcestershire,

Showeth,

THAT on the 23rd of November 1860, a memorial was addressed by this Chamber to the then First Lord of the Treasury, Viscount Palmerston, in support of efforts which other Chambers of the kingdom were making with Her Majesty's Government for the opening of a direct commercial way between the British port of Rangoon, the western inland frontier of China proper, and the Shan States of Burma.

That, on the 8th day of December 1860, your memorialists were answered by Lord John Russell, then Secretary of State for Foreign Affairs, "That Her Majesty's Government are not prepared to take any steps, at the present time, for opening commerce with China through the territory of Burma."

That this reply proving unsatisfactory to your memorialists, they, on the 5th of November 1863, forwarded a second memorial to Viscount Palmerston, more fully pointing out the beneficial increase that must result to the salt trade if a commercial way was made between Rangoon and the Upper Kamboja river.

That, to this second appeal, a reply was sent to your memorialists, on the 7th of December 1863, by Sir Charles Wood, then Secretary of State for India, stating, "That the Government of India have been instructed to report on the best means for developing the resources and improving the inter-communications of British Burma, &c."

That since then three and a half years have passed without further communication being made to your memorialists on the matter by any member of Her Majesty's Government, and they therefore respectfully call the attention of Her Majesty's Ministers to those their previous memorials, and again solicit the most early consideration of them.

That during the six and a half years which have passed away since their first

memorial, the question of direct trade with the Shans and Western Chinese by railway from Rangoon has been much advocated; and several papers and maps regarding the proposition have also been presented to Parliament, viz. :—

1. China, No. 5	- - - - -	} Session 1864.
2. Burma Commercial Treaty	- - - - -	
3. China, No. 2, 1865	- - - - -	} Session 1865.
4. Rangoon and Western China	- - - - -	
5. East India (British Burma)	- - - - -	} Session 1866.
6. East India (Shan States, &c.)	- - - - -	
7. Rangoon and Western China.	In continuation of	} Session 1867.
No. 4	- - - - -	

That your memorialists have, in the face of great reluctance on the part of the late East India Company and the succeeding Government of India, established, now permanently, an immense trade of salt with the province of Bengal, which employs a quarter of a million tons of British shipping; and they appeal to this great fact as proof that British commerce in raw produce can be successfully carried to the regions of the East.

That, therefore, your memorialists, being cognisant of the renewed efforts the manufacturing and mercantile communities of the kingdom are now making to attract to the project for direct trade with the Shans and Western Chinese, the serious consideration of Her Majesty's Government, as necessarily controlling the Government of India, beg leave again humbly to submit to your Lordship their prayer,—

That Her Majesty's Government will now be pleased to take the necessary steps for having the line of country between Rangoon and the Upper Kamboja river surveyed, to ascertain the most direct and practicable route for a rail or tramway between that port and that inland river.

That Her Majesty's Government will direct the Government of India to render such survey all possible assistance for the efficient and speedy execution of the work.

And your Lordship's memorialists will ever pray.

(signed) *H. E. Falk*, President.
John Moore, Secretary.

J. Cosmo Melvill, Esq., to Captain *Sprye*; dated India Office, 25 October 1867.

Sir,

I AM directed by Sir Stafford Northcote to acknowledge the receipt of your letter of the 12th instant, enclosing a printed copy of the memorials addressed to Her Majesty's Ministers by the various Chambers of Commerce, &c. on the question of opening up a communication with Western China through Burmah.

RANGOON AND WESTERN CHINA.

COPY of all MEMORIALS, and of LETTERS transmitting them, to the First Lord of the Treasury or other Minister, subsequent to 7th December 1863, on the subject of Opening up a direct COMMENCE with the *Shan States* and *West of China*, from the Port of *Rangoon*; and of the REPLIES thereto (in continuation of Parliamentary Paper, No. 6, of Session 1864).

(*Mr. Baines.*)

*Ordered, by The House of Commons, to be Printed,
3 December 1867.*

RANGOON AND WESTERN CHINA.

RETURN to an Address of the Honourable The House of Commons,
dated 28 November 1867;—for,

“COPIES of the SURVEY REPORT of Captains *Williams* and *Luard*, dated the 15th day of June 1867, and of the JOURNALS, MAPS, SECTIONS, &c. attached thereto, respecting *Rangoon* and *Western China* :”

“Of the LETTER forwarding the REPORT to the Chief Commissioner, of his Letter forwarding it to the Governor General of *India*, and of the Governor General’s Despatch transmitting it to the Secretary of State for *India* :”

“And, of all CORRESPONDENCE on the Subject, by Telegram or Letter, between the Governor General and Chief Commissioner subsequent to the 30th day of June 1867; and between the Governor General and the Secretary of State for *India* subsequent to the 15th day of August 1867 (in continuation of Parliamentary Paper, No. 421, of Session 1867, and not hitherto laid before Parliament).”

India Office, }
2 December 1867.)

J. R. MELVILLE,
Assistant Secretary, Political Department.

(*Mr. Bazley.*)

Ordered, by The House of Commons, to be Printed,
3 December 1867.

C O N T E N T S.

FROM	TO	DATE.	PAGE.
Governor General - - -	Sir S. Northcote - - -	15 August - 1867	3
Colonel Fytche - - -	India Government - - -	25 June - „	5
Report of Captains Williams and Luard - - -	- - -	15 June - „	8
Report of Mr. D'Avigdor on Beeling route - - -	- - -	- - -	20
Journal of Captains Williams and Luard - - -	- - -	- - -	22
Captain Watson - - -	Major Davies - - -	10 June - 1867	44
India Government - - -	Colonel Fytche - - -	15 August - „	46
Telegram from Sir S. Northcote -	Governor General - - -	15 October - „	46
Sir S. Northcote - - -	Ditto - - -	31 October - „	47
Governor General - - -	Sir S. Northcote - - -	26 August - „	47
Colonel Fytche - - -	India Government - - -	21 June - „	48
India Government - - -	Colonel Fytche - - -	18 July - „	50
Sir S. Northcote - - -	Governor General - - -	23 November „	50
Governor General - - -	Sir S. Northcote - - -	15 October - „	51
Colonel Fytche - - -	India Government - - -	26 August - „	51
Ditto - - -	Ditto - - -	26 August - „	54
India Government - - -	Colonel Fytche - - -	12 September „	55
Telegram ditto - - -	Ditto - - -	18 September „	56
Sir S. Northcote - - -	Governor General - - -	9 December „	56

COPIES of the SURVEY REPORT of Captains *Williams* and *Luard*, dated the 15th day of June 1867, and of the JOURNALS, MAPS, SECTIONS, &c. attached thereto, respecting *Rangoon* and *Western China* :—Of the LETTER forwarding the REPORT to the Chief Commissioner, of his Letter forwarding it to the Governor General of *India*, and of the Governor General's Despatch transmitting it to the Secretary of State for *India* :—And of all CORRESPONDENCE on the Subject, by Telegram or Letter, between the Governor General and Chief Commissioner subsequent to the 30th day of June 1867 ; and between the Governor General and the Secretary of State for *India* subsequent to the 15th day of August 1867 (in continuation of Parliamentary Paper No. 421, of Session 1867, and not hitherto laid before Parliament).

(Public Works Department. No. 133.)

The Governor General of India in Council to the Secretary of State for India ;
dated Simla, 15th August 1867.

Sir,

WE have the honour to report the proceedings taken in connection with your telegram of the 7th February last, for the preliminary survey and examination of the country, in view to a communication by road or railway being established between Rangoon and Western China.

2. The officers appointed to this duty were Captain J. M. Williams, of the Madras Army, A.I.C.E., and Captain C. H. Luard, R.E., who have now submitted through the Chief Commissioner the report of their operations for the season of 1866-67, embracing the examination of the country as far as the British frontier.

3. The country between Rangoon and Sittang and between Rangoon and Shoaygeen is well known to present no difficulties to the construction of either an ordinary road or a railroad, and was not therefore examined by the party. The route traversed and surveyed was from Sittang, on the river of that name, by Kykets to Beeling, on the Beeling river, and thence up the Beeling river to Pawatha, whence the route diverged east, *viâ* Kyunben Sakan, and crossed the watershed between the Beeling and Yonzaleen rivers, reaching the latter river near Paphooh. The valley of the Yonzaleen was then followed to Menga Sakan, a little north of which the watershed between the Yonzaleen and Salween rivers was crossed, and the route continued nearly northward to Pah Choung, a tributary of the Salween, and the boundary in this part of British Burmah. The party returned by nearly the same route to Kyumbeer Sakan, and thence branched off from their former route in a westerly direction to Shoaygeen, Mr. D'Avigdon, an assistant, being sent to survey the former route between Kyunben Sakan and Beeling. On arrival at Shoaygeen, Captains Williams and Luard went down the Sittang river to Sittang, and thence surveyed nearly along their former route to Beeling, whence the whole party returned to Rangoon.

4. The line traversed is shown by a firm red line, and the other tracks gone over but abandoned, by dotted red lines, in the map accompanying the report, and deviations not surveyed, but considered as likely to be improvements, are shown by green lines.

5. The probable best line could not, we think, have been precisely determined in the time available, but so far as the present examination goes, it would appear that of the two routes followed, that by Shoaygeen is 10 miles shorter than the other, the distance from Rangoon to the Pah Choung being 235 miles by it, and 245 by the Beeling or southerly route. The lower route, however, avoids the ascent and descent of one watershed, but it has to cross the Sittang where it is one-third wider than at Shoaygeen, and the decision come to is in favour of the Beeling route.

6. The engineering obstacles do not appear to be extraordinary or formidable, though some difficulties will doubtless have to be overcome in the latter part of the line.

7. In regard to the question of labour, it will be seen that within the British frontier labour, either skilled or unskilled, is insufficient for even present wants, but that this difficulty could be overcome by an extension of the present system of importation from Madras, of course at an expense in proportion to the distance to which the men must be brought. Beyond the British territory it is supposed that for unskilled labour local resources might be obtainable.

8. The statistics of population and cultivated area given in the report, have led Captains Williams and Luard to the conclusion that to confine the construction of a railway or a tramway to British territory in the direction travelled by them, without extending it to foreign territory, would be useless.

9. We are still, however, of opinion, that this scheme ought not to receive the support of the Government of India at the present time, and that whatever be its merits it is brought forward a generation too soon.

10. The three months operations already undergone, embrace an examination of country which would give about 245 miles of rail, and extend over two degrees of northing from the latitude of Rangoon. For the six more degrees that would be required to debouch on Western China, even if a lower average be adopted, the survey party must examine, in foreign and unknown territory, about 1,200 miles of line for a railway, exclusive of alternative lines. The survey, if properly carried out, may therefore, we fear, be protracted over more than one season, perhaps more than two, and this would require more money and engineers than can at present be well spared.

11. The railway, if undertaken, will be very costly, and probably involve a severe loss of life among the labourers. Moreover, there is danger of the prosecution of the project leading to a collision with Burmah. On these grounds we would deprecate any further expenditure of money and labour on the survey.

12. We have, however, given instructions for the survey to be carried out according to your orders, to the Chinese frontier, as will be seen from the accompanying copy of a letter addressed to the Chief Commissioner of British Burmah. Under these instructions, the survey will be pushed on directly the season for such work returns. But we are anxious to avoid the necessity for this, and should you be able to concur with our views, we request that instructions may be sent by telegram to stop further action in the matter.

We have, &c.

(signed) *John Lawrence.*
W. R. Mansfield.
H. S. Maine.
G. N. Taylor.
W. N. Massey.
H. M. Durand.
G. U. Yule.

(Public Works Department, British Burmah.—No. 355-4 C-c.)

From Colonel *Albert Fytche*, Chief Commissioner, British Burmah, and Agent to His Excellency the Viceroy and Governor General of India, to Colonel *C. H. Dickens*, Secretary to the Government of India, Public Works Department, Simla; dated Rangoon, 25th June 1867.

Sir,

I HAVE the honour to forward herewith for submission to his Excellency the Viceroy and Governor General of India in Council, the joint report of Captain *J. M. Williams*, A. I. C. E., and Captain *Lugard*, R. E., of operations of the China route survey, during the season of 1867, together with the following maps and sections.

Sheet No. 1. Map of the country between Rangoon and the British frontier, showing the routes examined.

Sheet No. 2. Longitudinal sections of the Shoaygheen and Beeling routes.

Sheet No. 3. Sections of the Sittang river opposite the towns of Shoaygheen and Sittang.

Sheet No. 4. Sections of the Beeling and Yonzaleen rivers.

2. The final object of the survey is, to ascertain the best practicable route for the construction of a railway from Rangoon to Western China, and in prosecution of this purpose, the past season's operations have been devoted to an examination of the country between Rangoon and north-east portion of British Burmah, as presenting the most direct line in British territory towards the locality in question, if the features of the country beyond our territories will permit of an extension of the line in the same direction.

3. The portion of the country now reported on therefore, is entirely within British territory; but even in this portion there necessarily existed a choice of routes, and the survey have examined two of these, both starting for some distance together, then diverging and again re-uniting in their common course.

4. The conclusion arrived at by the survey is, that what they style the Beeling route, is on the whole the more favourable of the two (*vide* para 29), and in this opinion I coincide.

5. Looking, then, at the Beeling route, the general result arrived at is, that of a total distance from Rangoon to the frontier of 245 miles of railway,—169 miles would be easy of construction, 35 miles would be moderate, and 40 miles would be difficult. (*Vide* Table No. 3 of para. 36.) While in para. 38, it is further remarked regarding this latter portion of the line, "that for the remaining 45 miles there would be considerable difficulties, and for a portion of that distance, they would be very severe. They are, however, such as are not unknown in railway undertakings, and might be overcome; but not without considerable cost, which only a large trade beyond the British frontier would warrant."

6. From paras. 13, 14, 15, 16, and 17, it would appear that the specific difficulty consists in crossing the watersheds of the Yonzaleen and Salween, a height of 2,186 feet above the point where the ascent leaves the Yonzaleen, that this would necessitate an ascending gradient of from 1 in 17 to (possibly) 1 in 30, for a distance of $6\frac{1}{2}$ or $11\frac{1}{2}$ miles, and a descending gradient of 1 in 24 for $6\frac{1}{2}$ miles,* with a further descent of 1 in 70, or probably easier for seven miles to the Salween river, and that from this point (the junction of the Mintabyee stream to the Salween) the line would be carried inside, cutting through limestone rock, at a height of 50 feet above the Salween, and would thus continue to the Pak Choung (stream), a distance of about 15 miles. Add to the above, that on this route, also, it would be necessary to bridge the Sittang river at a point where its breadth is 1,540 feet (*vide* Table No. 3 of para. 36), and we have apparently the whole of the serious obstacles to the construction of a railway by this route, as far as the natural features of the country are concerned.

7. In

* Within these distances a mile of tunnelling would be required.

7. In the face, then, of these difficulties, it is manifest, that the retention of this route now surveyed, will largely depend on the feasibility of its comparatively easy extension in the direction of Western China. I understand the main object in thus reaching the Salween so low in its course, was, the avoidance of the necessity of crossing the watersheds further to the north, where, from the general configuration of the country, it was anticipated the passage would be longer and more difficult, and it was thought at one time, that it would not be impossible to run up the valley of the Salween, direct from the point now reached, to the confines of China.

8. In virtue of its engineering facilities as a portion of the future entire line, the present route owes its main value therefore, and not because the British districts through which it passes are in the remotest degree capable of such development as would warrant the construction of a railway therein.

9. It is consequently essential, that the future course of the present route be examined before a correct judgment can be formed of the comparative advantages it possesses, or does not possess, over other possible routes towards the same point as this line will probably reach. (*Vide* para. 35 of Report).

10. Whatever may be thought of this isolated portion of the projected line, I can have no hesitation in strongly recommending that the survey be continued to the confines of China, and that the examination proceed from the point where this year's work left off.

11. The disadvantages of attempting the ascent of the Salween, consist in the almost certain hostility of the tribes who inhabit its banks, and the fact, that the valley as known to us in British territory, and as reported on higher up, is barren and too narrow to admit of cultivation. (*Vide* para. 42). It is, therefore, proposed by the officers of the survey, that they proceed from the Pak Choung by the western bank of the Salween to the Kaima-phyoo stream, a distance of (say) 25 miles, and from that, take the direction of the latter stream in a north-west direction to the Mobyai valley, and from that across the Salween at the Takaw Ferry, Theinnee, or other point, north of Karennee, as may be found to be best. (Para. 43).

12. Captain Watson, who ascended the Mobyai valley by this route, in 1863-64, states (para. 45) that he anticipates no great difficulties will be experienced between the Kaima-phyoo and Theinnee; and a good general description of the line of country may be gathered from Lieutenant Sconce's journal of the expedition of 1863-64 (Selections from the Records of Government, Foreign Department, No. 48, published in 1865), and from Captain Watson's journal of the expedition of 1864-65 (Selections from the Records of Government, Foreign Department, No. 49, published in 1865). The first of these describes the country from the Kaima-phyoo to the large lake of Enlay (printed erroneously "*Inlay*" in the Selections), near the town of Nyoung-yawai. While the second describes the country from that to the neighbourhood of Theinnee, and also the route from Legya or Ledêa to the Takaw Ferry.

13. Until these places, viz., Theinnee and the Takaw Ferry, are reached, there seem to be no serious difficulties; but our knowledge of the country to the eastward of these points is very scanty. We know, however, that there are lines of traffic by both these routes to China, and it may be contemplated, therefore, that, under favourable circumstances, the survey party may be able to reach the Cambodia river on the western confines of China, even in one season.

14. By Theinnee traffic flows through the Shan States of Kaing-tha and Maing-maing, from the northern portion of the provinces of Yunnan to Burma Proper, and it is by this route some of the trade formerly passing *via* Bhamo now reaches Mandalay, since this latter route was closed. The Shan States of Kaing-tha and Maing-maing are tributary to the Court of Ava, so that up to the Cambodia river probably, in this direction, the survey may prosecute their inquiries under the authoritative sanction of the Burmese Government.

15. From the Takaw Ferry, the more southerly route runs eastwards through the Shan States of Keang-Tung and Kiang-Hung, which are also tributary to
Ava,

Ava, and there again the Cambodia is reached, the latter State stretching across that river to the eastward in immediate contact with China Proper. During this portion of the route also the survey party may travel under the protection of the Burmese Court.

16. Presuming, therefore, that the expedition may be able to traverse rapidly from the Pak stream, which is our north-east boundary, and is the point where this year's survey closed, to the Takaw Ferry on the Salween, or to Theinnee, which is close to that river, then the further critical portion of the line from the Salween to the Cambodia might be examined, as on its practicability will depend any further examination of the country west of the Salween.

17. Should the country east of the Salween to the Cambodia present no insurmountable difficulties, it would certainly be advisable that an examination should be made of other routes which will lead from Rangoon to the Takaw Ferry and to Theinnee, and which, in their general course towards these points, will open up tracts of country, already very important when compared with the present "Beeling Route," and which are capable of further development to an extent which would probably make the construction of a railway through them alone not unremunerative.

18. But it is observed in the report (para. 44), these routes may await thorough examination, until the country east of the Salween has been investigated, and when, therefore, the line as a whole will be better known, and its feasibility established. It is only then that, as a financial scheme, it can be properly weighed, and the engineering difficulties or facilities of various routes be fairly estimated with their other qualities of a political nature, and their capabilities for local as well as through traffic, with all the important questions hinging thereon.

19. Reverting, then, to the proposed work for next year, I have now to notice the measures that will be necessary to facilitate the progress of the party from our north-east frontier. The Pak stream, at which the survey stopped this year, is our boundary, so that, on crossing that stream, the party will at once enter foreign territory, the right over which is claimed by the Eastern Karennees, who, although they do not occupy the ground between the Pak and Kaima-phyoo streams, levy taxes from the Karens, who do. Regarding this part of the country. (*Vide* Letter No. 187, of 19th August 1864, from my predecessor to the Secretary to the Government of India, Foreign Department, Selections from Records of Government of India, Foreign Department, No. 48).

20. I do not anticipate the passage of the party will be seriously disputed, unless the resentment or alarm of these Hill Tribes is unusually excited; and such a state of affairs could be readily learned before the survey left British territory.

21. Having reached the Kaima-phyoo, the survey would lead to the north-west, into Western Karennee, where the chiefs and people have always been friendly. But it unfortunately happens, regarding this portion of the route, as well as some distance further on, that the Menggon Prince, who fled from British territory in February last, has been sheltered by the chiefs of Western Karennee, and has there hatched another rebellion against his father. As I write, rumour speaks of his having advanced towards Mandalay, passing through Monai, Mobyai, and Nyoung-yuwai, and it is impossible to conjecture what may be the result.

22. But supposing he has not yet been able to leave Karennee, and cannot raise a sufficient party until some months have elapsed; or supposing he does leave, and is repulsed, but not killed or captured, and again takes refuge in Karennee, it will be a matter of difficulty to escape the suspicion of the Court of Ava, if the party proceed through Western Karennee, where the Menggon Prince may then be in shelter.

23. To a lesser extent the same difficulties apply to a passage through the Shan States at such a time. Some of these States are almost always rebelling, or attempting to rebel, against the King of Burma, and the presence of the

Menggon Prince in the neighbourhood has excited, and will continue to excite, their hopes. It is known that he has been trying to gain over their active assistance in the attempt on the throne of Burma.

24. It may not, therefore, prove advisable that the survey party should proceed by the Kaima-phyoo, through the Mobyai valley, to the upper Shan States. This will be entirely dependent on the position of affairs in that locality at the time the season opens.

25. Should his Excellency the Governor General and Viceroy decide that the survey is to be persevered with, it will be necessary that I should make application to the Court of Ava for a royal order to facilitate the progress of the party up to the Cambodia river.

26. If it be found impossible or impolitic to proceed through Western Karennee, the survey party could still reach the Northern Shan States by Toungeo, Nying-gan, and Yamaythen, and then proceed east of the Salween to explore the country between that river and the Combodia, on which so much depends.

27. I beg to append copy of Letter No. 1, of 10th June (instant), just received from Captain Watson, the officer who has been selected to accompany the survey next year as political officer (should it proceed across the frontier), in which will be found described some of the difficulties in prosecuting the journey through Western Karennee, and in which reference is made to the Yamathen route. I do not concur in one of his objections to the latter route, viz., that a great length lies in Burmese territory, when the alternative line through Karennee presents the political obstacles he describes, which will be possibly felt even in the survey operations, and which would certainly not be absent during the actual construction of the railway.

28. It only remains for me to add that I consider the survey operations have been conducted with great skill and energy by Captains Williams and Luard, and should the Viceroy determine that the survey be continued next season, I would recommend their being again employed on the duty.

29. There has been no time to prepare here copies of the map and sections which accompany the report, and I would suggest that they be lithographed, and a supply furnished this office.

I have, &c.
(signed) *Albert Fytche*, Colonel.

CHINA ROUTE SURVEY.

REPORT of Operations during the Season of 1867, by Captain *J. M. Williams*, A.I.C.E., and Captain *C. H. Luard*, R.E.

1. FROM Rangoon to the Sittang river the country is practically level, and is drained by numerous small creeks which fall into the Pegu and Sittang rivers. This part of British Burma has been accurately surveyed both topographically and in connection with canal and road projects, and was not examined by us. East of the Sittang, hills which are extensions of the Himalaya range reach southwards almost as far as the town of Beeling; what level ground there is being confined to the immediate neighbourhood of rivers and the larger streams. The hills, running north and south, form the watersheds of the Sittang, Beeling, Yonzaleen, and Salween rivers. The three rivers first-mentioned, and their watersheds, must be crossed by any route taking a direct line to the British frontier on the north-east.

2. Two routes in that direction have been examined. One by Shoaygeen, which will be called "The Shoaygeen Route," crosses the watershed on the Thekay-doung range to the east of Shoaygeen. The other passing south through Kyketo, enters the Beeling valley a little to the north of the town of that name, and instead of crossing the hills of the Sittang watershed passes round their base. This route will be called "The Beeling Route." The watershed between the Sittang and Beeling will be spoken of as "The Sittang watershed"; that between the Beeling and Yonzaleen as "The Beeling watershed"; and that between the Yonzaleen and Salween as "The Yonzaleen watershed."

3. Both

3. Both routes above-named are shown on Sheet No. 1 of the accompanying plans:—

The red lines on this sheet denote the routes surveyed, and of which sections are submitted.

The green lines, such as have not been surveyed, but which from our knowledge of the country appear likely to be improvements on the surveyed lines.

The red dotted lines show routes which have been surveyed, but rejected.

The routes examined coincide from Rangoon to Pegu, and also from point A. in the 166th mile on the Beeling river northwards to the Pah Choung. In comparing their merits it will only be necessary, therefore, to consider the different lines taken between Pegu and the point A.

4. After leaving Rangoon, the first object to be encountered is the Pegu river, 300 feet broad, which might be bridged without difficulty. The passage thence across the Pegu plains is easy; an embankment of from $2\frac{1}{2}$ to 3 feet is all that would be required. From Pegu the Shoaygyeen route takes the direction of Shoaygyeen, and near that place crosses the Sittang river, which is about 1,040 feet broad. From the east of this river the route passes through a fairly easy country for 20 miles, when it nears the Thekay-doung range, which is the watershed of the Sittang. This is a difficult obstacle, and will be more particularly described hereafter. Having crossed this range the route descends into the Beeling valley, and at the point A. joins the Beeling route.

5. Thence the common route passes through an easy country to the Beeling watershed, crosses this, and passes (as shown by the green line) up the Yonzaleen valley on the right bank of the river; at a point about 12 miles above Pahpoo, crosses it, and approaches the Yonzaleen watershed. This with the country between it and the Pah Choung are the serious difficulties which have to be encountered.

6. The Beeling route after leaving Pegu takes the direction of Sittang, crosses the river (1,520 feet broad) near that town, and thence passes by Kyketo into the Beeling valley a little north of the town. By following this course the Beeling route though about 10 miles longer than that by Shoaygyeen avoids the high watershed on the Thekay-doung above-mentioned. From Beeling the route passes alongside the river, finally joining the Shoaygyeen route at the point A. To reach that point with the fewest engineering difficulties, the river must be crossed twice in order to avoid spurs which come down to its edge, but as in this neighbourhood it is only about 300 feet broad, bridges would not be a serious expense. From the point A. the route is common, and has been described above.

7. Sheet No. 2 is a section on the red line surveyed. In considering the routes more in detail, an examination of this in conjunction with Sheet No. 1, will present more clearly than words can, the character of the country, and enable Government to judge how far we are justified in the conclusions we come to. The section has been prepared by means of aneroid barometers, compared from time to time with a standard mountain barometer, and the observations taken have been corrected for temperature and diurnal atmospheric tides. It cannot pretend to rigid accuracy, nor can the frequently occurring minor depressions and elevations of the ground be shown upon it, but it gives a fairly approximate general section of the country. Much of the journey, more especially towards its end, was through a dense jungle, relieved by occasional patches of cultivation. It was necessary there to confine the section to the main track, which is not always the easiest that can be obtained. To have diverged wherever it appeared capable of improvement, would have caused an expenditure of time in clearing jungle, which was out of the question. In many cases therefore the country is represented at its worst, but in others too favourably; as for instance, along the bank of the Salween, where the route, which would really have to be carried in side cutting, would without explanation appear to pass along a level plain.

8. Taking the Shoaygyeen route first there is no obstacle of importance till the Sittang watershed is reached. This, which is shown on the upper section sheet No. 2, is 1,756 feet above sea level, and its ascent might be commenced

four miles distant from it, at an elevation of 921 feet, leaving 835 feet to be overcome; with this base and a tunnel through the summit, somewhat reducing its height, the gradient from the Shoaygyeen side might be reduced to 1 in 60. The ascent would be in side cutting through limestone rock and laterite. The descent to the Beeling valley involving similar cutting could be made by a gradient of 1 in 40. The lower ground being reached a line could be carried almost at a level to the point A on the Beeling river, but there would still be a few miles of side cutting in the valley of the Maywine Choung as the ends of the spurs forming the valleys of tributary streams descending to it would have to be crossed.

9. The Beeling route, which avoids these difficulties, is described by Mr. d'Avigdor, who examined the lower portion of the valley, as follows:—

"From Sittang to Kyketo the road would present no engineering difficulties whatever. From the hills the ground gradually falls to the river so that a road could be laid down skirting them either over gently undulating laterite or over alluvial plains partially flooded during the rainy season. The latter course would involve low embanking. Spurs from the main ridge of the Sittang watershed extend to Kyketo itself and the whole line from here to the Beeling river skirts them." * * * *

"Nine miles from Kyketo the line crosses the Thaybyoo choung of which the bed is here 200 feet wide. In the dry weather a little foetid water only flows down it. Between this and the village of Yéoun the route skirts a succession of spurs and crosses a neck which in fact is the real Sittang watershed; it is, however, so low, that the aneroid showed no variation." * * *

"From Yéoun to about two miles south of Lagonbyoo the line ascends the Beeling river, first on the right, then on the left, and lastly on the right bank again. Between these two points there is not the slightest engineering difficulty; as far as I could judge, no side cutting whatever and no embankment higher than three or four feet would be required. Below Lagonbyoo the line surveyed crosses to the left bank and soon after leaves the Beeling river. A section of this portion is shown, but the route marked by the green line on the right bank of the Beeling is recommended, although it has not been surveyed. But the result of inquiries, the general appearance of the country and careful consideration of the maps led us to believe that there were probably no engineering difficulties on this portion of the route, and certainly no serious ones." * * *

10. After junction, the route passes along the Mana-noway river. This, although not surveyed, has been examined with the exception of about three miles, and presents no difficulties, nor are any met with until the Beeling watershed is reached. This, which is not a serious obstacle, is 580 feet above the sea level or about 200 feet above the valley of the Yonzaleen, and may be crossed, as shown in the section, by means of a gradient of 1 in 60 ascending from the Beeling valley, and another of 1 in 110 descending to the valley of the Yonzaleen. No tunnel would be necessary, and the cuttings, which would be in limestone rock, would not be very heavy. The main track of the country passes along the left bank of the Yonzaleen, and it is along this that the section has been taken. But from the foot of the Beeling watershed, a better route on the right bank of the river is shown by a green line, which would provide an easy course for a railway.

This, after proceeding 10 miles, crosses the river near a spur offering facilities for the ascent of the Yonzaleen watershed, which with the country between it and the Pah Choung form, as has previously been remarked, the serious difficulties of the line.

11. The main range of hills is chiefly composed of limestone rock, its direction bearing a little west of north. From this range spurs descend due south to the Yonzaleen, some of them several miles in length, and thus afford opportunities for a more gradual ascent than would otherwise be possible. It is along such a spur that the present bullock track crosses the range, but as no labour has been expended on its formation it is more difficult than it need be. This spur is shown on "the sketch" of the ground near the Yonzaleen watershed attached to sheet No. 2. It forms the western boundary of the stream known as the Kolothau Choung which flows from the watershed into the Yonzaleen

Yonzaleen near Menga Sakan. Up the valley of this stream a trace was cut through the jungle; and a section of this trace which is represented by a red line on the sketch map, is shown immediately below it on sheet No. 2. It is not favourable. The spur forming the eastern boundary of the Kolothau valley provides, however, the means of obtaining the easier ascent shown on the map by a green line.

12. From the Sittang to the Yonzaleen watershed the soil is richly fertile; but here the comparatively open ground met with in the Beeling and Yonzaleen valleys ceases, and shortly after crossing the watershed, the physical character of the country suffers an entire change. The rich surface mould in which vegetation has hitherto luxuriated disappears, and leaves the limestone rock almost bare. In the place of valleys there are narrow rocky gorges, in which for the greater part of their length the streams run. There is little level ground anywhere, and cultivation is confined to the few small patches which exist in the neighbourhood of rivers.

13. The unfavourable character of the section by the Kolothau Choung is clearly shown in sheet No. 2. Its highest point, which is the lowest on the watershed, is 2,686 feet above the sea level, and 500 feet less, or 2,186 feet above the point where the Kolothau Choung enters the Yonzaleen. This point, Menga Sakan is only six miles and a quarter distant, so that even with a mile tunnel, as shown in the section, the gradient would not be less than 1 in 17. In practice, from the necessity of following the winding of spurs, it would be somewhat though not much modified. But by taking the route shown by the green line the base could be extended to $11\frac{1}{2}$ miles, and a gradient obtained of 1 in 30, which in construction would be necessarily less steep. This route, however, it was impossible for us to survey. The spur along which it passes is covered with tree jungle and dense tropical vegetation, and a thorough investigation of it alone would take more time than was spent on our entire survey. Our opinion regarding its value may therefore perhaps be too favourable; but we think that it would certainly assist the ascent though possibly not to the extent we anticipate. That the base could be extended any further than we have mentioned seems improbable; nor by examination or inquiry could we find that there was any lower point on the watershed.

14. It may, we think, therefore, be asserted, that under favourable circumstances this range may be ascended by a gradient of about 1 in 30, but that it would, unless the eastern spur were made use of, be little less steep than 1 in 17. These gradients would both be obtained by following the windings of valleys, without the introduction of zigzags, such as have been successfully employed on American lines.

15. After crossing the watershed, a descent by a gradient of 1 in 24 reaches the valley of the Saudoolau Choung in six miles and a quarter. The direction of this valley is so good, and its difficulties are so slight, that we were in hopes to have found a short passage by its means through the hills to the Salween river. Halting at Kolodo, we spent a disappointing week in the survey and examination of the neighbourhood. Some sections when half plotted, looked hopeful, but if the valley at one side of the hill proved favourable, the corresponding one on the opposite side was invariably too steep to be useful. We were at length therefore compelled to abandon the idea, and search for a practicable route in some other direction. The only moderately good one is that by the Mintabyee Choung to its mouth, and thence along the bank of the Salween river to the Pah Choung.

16. From the above-mentioned point in the Saudoolau, a gradient of 1 in 70 carries the route by the valley of the Mintabyee down to the Salween river. This gradient might probably be eased, for the Saudoolau, though apparently otherwise useless, might be taken advantage of for its improvement; the line might be carried for some distance up the valley towards Kolodo, thence returning to the Mintabyee, and thus extending the base.

17. From the mouth of the Mintabyee the line could be carried in side cutting through limestone rock, at a height of about 50 feet above the River Salween, and would thus continue up to the Pah Choung. In its course it would encounter the Padee Choung, which is about 150 yards broad at its mouth.

This in the hot weather is the only stream met with, but there are many gullies in the hill sides which, though then dry, must in the rains become torrents for a few hours. For these, waterway would therefore be required. At the Pah Choung our examination ceased, that being the British frontier, and the limit within which our investigation was ordered to be confined. On our return journey, when unfortunately the lateness of the season prevented our retracing our steps, we received the Chief Commissioner's permission to advance further, accompanied by a permit from the King of Burma.

18. From what has been said, it will be perceived that the Shoaygyeen route, though the shorter, is more difficult than that by Beeling, which is 245 instead of 235 miles in length. Either route has to encounter 40 miles of difficult country between the upper portion of the Yonzaleen valley and the Pah Choung, but until that is reached the Beeling meets with no serious obstacles. The Shoaygyeen route on the contrary, adds the Sittang watershed to the difficulties common to both routes, while the Beeling route near Sittang crosses the Sittang river at a point where it is 1,540 feet broad, or one-third broader than it is near Shoaygyeen. The difficulties of the Shoaygyeen route begin at its 140th mile. The Beeling route passes through comparatively easy country for 200 miles of its length.

19. Having thus considered the project in its engineering details, we proceed to describe generally the country through which the line passes :—

In the level land known as the Pegu plains, the only important town between Rangoon and the Sittang river is the ancient city of Pegu, which has a population of 15,500, and has a considerable trade in rice.

20. The several towns on the Beeling route are fully described in para 28. The only ones of any importance passed through on the Shoaygyeen line were the town of Shoaygyeen and Pahpoo in the Yonzaleen. The former has a population of 7,700, and has a small military garrison consisting of two companies of native infantry. The latter, the chief town of Yonzaleen, is a mere village, having a population of 2,700, whose chief wealth appears to consist in elephants, of which there are a large number, principally employed in the teak forests, but also for the conveyance of what small traffic passes between the different villages in the district. We only remained in Pahpoo two days, and yet even for that short period, we found ourselves solely dependent on our own stores, and though we offered whatever price the villagers liked to ask for fowls and other supplies, we could get nothing. Besides these towns, there are villages, of course, but these are invariably so carefully concealed in the depth of the forest that we seldom came upon them ; but though we failed to see them, we had evidence of their existence by the reliefs of coolies which met us at each halting place. Of the town and villages between Pegu and Shoaygyeen, we are unable to speak from observation, as we did not survey that portion of the line.

21. The plains of Pegu are but partially cultivated owing to the paucity of the inhabitants, but the country is capable of great development, and only requires a sufficient and industrious agricultural population to make it extremely productive. But between Shoaygyeen and the Beeling river the country is so hilly and confined as to hold out little attraction to an agricultural population. One of the great objects of extending our communication toward the populous Shan States is to induce emigration from them, and in selecting a route for a railway, this fact must be kept in view.

22. The routes examined this year have the advantages of proceeding by the most direct line to the Moby valley in the Shan States. This valley, very fertile and thickly populated, has its most southerly point about 40 miles distant from our north east frontier on the Pah Choung. To enter it, however, these routes pass for a less distance through the plains of British Burmah than others more to the west would do, and so far are less advantageous. But, in respect of bringing the ports of British Burmah into rapid communication with the China trade, and also of traversing the entire length of the Mobyai valley instead of entering at a more northern point, they have merits of their own.

23. The subjoined table, prepared from statistics furnished by the Chief Commissioner's office, shows the proportionate area of cultivated and uncultivated

vated ground in the districts traversed by these routes. It is to be regretted that we cannot state the proportion of hilly to level ground since a consideration of this table would lead to the conclusion that more culturable land is available than is really the case.

TABLE No. 1.

BEELING ROUTE.

TOWNSHIPS.	Area in Square Miles.	Proportion	
		Cultivated.	Uncultivated.
From Rangoon to Sittang exclusive of Rangoon Township - - - - -	787	·263	·737
Sittang - - - - -	640	·014	·986
Kyketo and Beeling - - - - -	1,060	·024	·976
Yonzaleen - - - - -	4,024	·003	·997
TOTAL - - -	6,515	·044	·956

SHOAYGYEEN ROUTE.

TOWNSHIPS.	Area in Square Miles.	Proportion	
		Cultivated.	Uncultivated.
From Rangoon to Sittang river exclusive of Rangoon Township - - - - -	787	·263	·737
Shoaygyeen - - - - -	1,020	·025	·975
Yonzaleen - - - - -	4,024	·003	·997
TOTAL - - -	5,831	·043	·957

24. A considerable area of the hill sides both in the Beeling and Yonzaleen valleys would doubtless be favourable for certain varieties of cultivation, but still there remains much which could yield but little return to the agriculturist. This is especially the case between the Yonzaleen watershed and the Pah Choung, where nothing but teak and bamboos appear to thrive.

This part of the country is occupied by Karens, who seclude themselves in the hills far away from the rest of mankind. Extremely peaceable and quiet themselves, they were in former times much oppressed by the more powerful neighbouring tribes, and still adhere to the custom then formed of hiding their villages in dense jungle. The paths to these from the main track are too slight to attract notice, and are so jealousy concealed, that men will say, you cannot go in a certain direction, rather than take you near their houses. It was not unfrequent to spend much labour in cutting a line through jungle, and to find afterwards a path which was perfectly well known, and would have saved all the trouble. As a village is approached there is a general flight of the inhabitants; and on entering it, the only living things are, usually, a few cocks and hens, a pig or two, and perhaps a child who has been forgotten in the hurry of departure. Of the paths which pass near the burial-ground, the inhabitants are even more careful, as, to betray the resting-place of the dead is among these people considered a heinous crime. In passing through their country, indeed, the usual signs of a population are absent, and the only proof of the existence of human beings are the footpaths and the clearings on the hill sides. These last, at first sight, appear so extensive as to give the impression of a large population, and the wonder is where this population may be, for it is an extremely rare thing to come across any one at work in their fields. The area of land under cultivation, however, is not in reality so large as it seems to be. Ground is abandoned as soon as its fertility begins to decrease and new jungle is cleared. In consequence, many of the clearings seen are those which are not under actual cultivation, but have been for some time relinquished.

25. Rice of an inferior quality is the chief produce, and appears to be grown in quantities sufficient only for local consumption. A little tobacco and cotton of a poor quality are also grown in small quantities for the same purpose; what export trade there is being confined to the Betel nut. Betel palm plantations are common in the gorges of the hills, and have no attention paid to them beyond the occasional diversion of a stream for their irrigation. The soil indeed both on the hills and the plains, is extremely fertile up to the Yonzaleen watershed, and might with a sufficient and industrious population be very productive within certain limits.

26. Teak occurs in the valley, and the magnificent Pyingadow, or iron-wood, on the hill sides. It is no uncommon thing to see the first branch of these trees at a height of 80 feet from the ground, the stem being perfectly straight up to that point. It is unfortunate that up to the present time no use has been found for this timber, which from its hardness effectually resists the attacks of white ants and other insects, and might be procured for any scantling. But there is no doubt that in the event of a railway being constructed this timber will be extensively employed.

27. The Yonzaleen watershed having been crossed, the character of the country, after a short distance, entirely changes. Its confined nature, with streams flowing not in valleys, but in steep gorges, has been already mentioned when describing the engineering features, but the change in the vegetation is even more striking. For a few miles the route passes, as before, among hills well clothed with verdure, but this gradually ceases to be the case. Timber trees, and their beautiful creepers, disappear and give place to scant unhealthy looking jungle, consisting almost entirely of bamboo; and this tree, so green and luxuriant a few miles back, was here (in March) dry and withered, the ground being yellow with its fallen leaves, or black with their ashes wherever the continually occurring jungle fires had passed over the ground. The aspect was desolate in the extreme, and we appeared to have passed suddenly from summer to mid-winter, but the height of the thermometer speedily dispelled this illusion, and an explanation of the strange change must be sought in the soil. This is extremely shallow, barely, indeed, covering the rocks of which the hills are composed and which, from the amount of lime contained in them, seem to be very unfavourable to vegetation. The streams are strongly impregnated with lime, and the rocks in their beds are covered with its incrustations. The same cheerless country extends as far as the Pah Choung, where there is some slight improvement, and the eye is again occasionally refreshed by the sight of green foliage.

28. The general character of the Beeling valley is thus described by Mr. d'Avigdor:—

“The Beeling route passes through several important towns or villages, and would, besides forming a step towards direct communication with Maulmain, open up a valuable district. Between Pegu and Sittang, the country is eminently adapted for the cultivation of rice; and though these plains are now among the most productive in British Burmah, they could doubtless be made much more so by a proper system of drainage and communications. There are several villages on this portion of the line; none, however, of any importance until Sittang, which contains 3,800 inhabitants, is reached. Between this and Kyketo the plains crossed are of a similar character to those on the western side of the river, and are partially under rice cultivation. The route passes near the small villages of Shoaylanbo and Kyketha; the large village of Wimbado, on the bank of the Sittang, is left on the right.

“Kyketo is a considerable town, containing 5,300 inhabitants. There is a colony of Bengalees established here, many of whom trade in cloth, and the Shans, who pass through yearly on their way to Maulmain, probably assist this trade. There is also a Karen Bazaar. The Kyketo creek is navigable for large boats, and communicates with the Beeling and Sittang rivers during the rains. The track passes within two miles of the town of Beeling, which contains 5,100 inhabitants, and gives its name to the district, though it is less busy and important than Kyketo. Between the latter and Yéoun there are a few scattered villages both of Burmese and Karens, none, however, of any size. The country is almost entirely covered with tree jungle, among which I noticed the wood-oil tree (*Dipterocarpus grandiflora*), the wild fig (*Ficus macrophylla*),

macrophylla), and particularly the peema (*Lagerstræmia Pycnma*), in large quantities.

“Three miles from Yéoun, on the left of the route, is a pagoda, on the ridges forming the Beeling watershed; this is a great centre of attraction for the Burmese, who, on feast days, flock to it in hundreds from all directions. It is surrounded by numerous zayats, or rest houses, for man and beast; for the Burmese in this district possess numerous buffaloes and buffalo carts. This pagoda is surrounded by magnificent Amherstias (*Amherstia nobilis*).

“Yéoun is a populous and busy town of 4,800 inhabitants, who employ many buffaloes at their paddy mills, and cultivate a great deal of the surrounding district; above Yéoun, however, the population is much more sparse; buffaloes and carts cease, and the three villages passed (Natkee, Wingalay, and Lagonbyoo) are very small. On the whole the Beeling valley is rich, and, I believe, almost any cultivation would succeed in it. Rice, tobacco, and Betel palms luxuriate; every village is a mango grove, and every clearing produces, spontaneously, fine pasture. Wider and more open than the Yonzaleen valley, it is better adapted for general cultivation; it is less rocky. The river in its windings affords tracts of alluvial soil at each bend, the hill sides are much less steep, and would probably produce anything, from rice to tea or coffee; water is plentiful, and the climate seems healthy. The highest temperature I observed in the hottest month (April) was only 96°, and the mornings were always comparatively cool, 75° being the highest observed at sunrise. Any amount of produce could be floated down on bamboo rafts from above Pahwatta, and a good road parallel to the river would cost a mere trifle. Peema, iron-wood, (Eng.), and wood-oil trees abound, and in the upper portions of the valley there is said to be teak.”

29. From this description, the statistics we have given, and an examination of the sections of the Shoaygyeen and Beeling routes, it will be understood that the latter, on the whole, is the more favourable. The Shoaygyeen route, though 10 miles shorter, has to cross the difficult Sittang watershed, and has no other special advantages which would lead it to be preferred. It is true that it passes for a greater distance through the plains, which are capable of considerable development, but the unfavourable nature of the country both in an engineering and agricultural point of view, as soon as the Sittang is passed, make the balance, in our opinion, in favour of a line by Beeling; which, besides being less difficult to construct, would also by its direction place Maulmain in a favourable position for sharing in the China trade.

30. As regards population the following table shows its very scanty nature in the several districts through which the routes examined by us passed. On these taken together, it is only 20·6 per square mile on the Beeling route, and in the Yonzaleen district but 4·8. It would be useless, therefore, to look for a sufficient supply of local labour even of the most unskilled sort.

TABLE No. 2.

BEELING ROUTE.

TOWNSHIPS.	Area in Square Miles.	Total Population.	Population per Square Mile.
From Rangoon to Sittang River, exclusive of Rangoon Township - - - - -	787	77,572	98·4
Sittang - - - - -	640	10,449	16·3
Kyketto to Beeling - - - - -	1,064	27,181	25·5
Yonzaleen - - - - -	4,024	19,396	4·8
TOTAL - - -	6,515	134,598	20·6

N.B.—The population of Rangoon is about 60,000 inhabitants, that of Maulmain about the same.

SHOAYGYEEN ROUTE.

TOWNSHIPS.	Area in Square Miles.	Total Population.	Population per Square Mile.
From Rangoon to Sittang River, exclusive of Rangoon Township - - - - -	787	77,572	98.4
Shoaygyeen - - - - -	1,020	36,798	36.0
Yonzaleen - - - - -	4,024	19,396	4.8
TOTAL - - -	5,831	133,766	22.9

31. For the construction of a line, labour both skilled and unskilled would have to be brought from a distance. The indigenous population of British Burma is quite insufficient even for the present supply of the labour market. Earthwork, and nearly all unskilled labour in Pegu, are performed by natives of the Madras Presidency. These men generally come over in ships belonging to native merchants, and on arrival in Rangoon, meet with numerous petty contractors who pay their passages, and thus release them from the shipowners. But in return, the coolies bind themselves to work for the contractors for a term of years at low wages, from 5 rupees to 8 rupees per month. The speculators are thus enabled to take up contracts at rates which would be quite unremunerative if they had to seek their labour in the open market, where the ordinary wages of a cooly are from 10 to 12 rupees a month. The importation of labourers into Burma would therefore be no novelty; and if systematised and conducted on liberal and humane principles, labour a hundred miles from the seaboard would probably be provided for large works at the same cost that now obtains for petty contracts in Rangoon.

32. Skilled labour is principally in the hands of Chinamen and Bengalees, who immigrate to Burma, paying their own way, and find their advantage in the comparatively high rates they obtain. On any great work being undertaken, there is little doubt that a contractor by exercising moderate foresight would find no difficulty in procuring any amount of skilled labour from the same sources, and at the same rates.

33. To show the amount of indigenous labour it may be stated that the greatest number of labourers that have at any time been simultaneously employed on Public Works in the Rangoon and Pegu townships, was in 1863, when nearly 6,000, of whom 5,000 were Burmans, were employed on the Pyne Kyun Creek and Hmaubee-road, without causing any drain on the labour market of Rangoon.

34. Beyond the British frontier in the Shan States, there is no reason to anticipate any paucity of unskilled labour; it is probable therefore that in the event of a railway being constructed, this portion of it might depend in this respect upon local resources.

35. It would be of no practical value to make an approximate estimate of the cost of a railway through the country we examined, for our description of it will have shown, that to construct a railway, or even a tramway, within British territory, in the direction in which we travelled, would be at present absurd; and that to be remunerative, it would have to be carried into foreign States, where there is said to be a large trade. With no knowledge of the extent of that trade, nor of the engineering difficulties to be overcome in reaching its centre, it would be impossible to say what class of railway would be required, and whether the average cost of construction per mile of the whole line, would be large or small; nor is it at all certain, if a railway should at any time be made, that either of the routes we have surveyed would be selected.

36. But to facilitate a future approximation, we subjoin Table No. 3, showing the character of construction rendered necessary by the country traversed between Rangoon and the Pah Choung, giving a list of the rivers which would have to be crossed, with their breadth in feet; and Table 4, showing the cost

of labour in British Burma, according to contract rates at the present time, and its cost on the Great Indian Peninsular Railway, as stated in Mr. Berkeley's paper, read at the Institution of Civil Engineers on 8th May 1860. This line has been chosen for comparison, as it has difficulties somewhat similar to those which are met with on the routes we have described, and also because it is the Indian line on which there has been, so far as we know, the largest experience in tunnelling.

TABLE No. 3.

ROUTE.	Nature of Construction.				
	Easy.	Moderate.	Difficult.	Tunnelling in Miles.	TOTAL Mileage.
Shoaygyeen - - -	144	31	58	2	235
Beeling - - -	169	35	40	1	245

The Section slightly differs from this, as the above measurements are taken on the green lines where they occur.

ROUTE.	Rivers to be Crossed, showing their Breadth in Feet.							
	Pegu.	Sittang.	Thaybyoo.	Beeling.			Yonzaleen.	Padee.
Shoaygyeen -	300	1,020	- -	-	-	240	250	450
Beeling - -	300	1,540	200	280	390	240	250	450

TABLE No. 4.

DESCRIPTIONS.	Rate.	Bombay.			British Burma.		
		£.	s.	d.	£.	s.	d.
Earthwork in Embankment under $\frac{1}{4}$ mile lead - -	Cubic yard	-	-	6	to	-	7 $\frac{1}{2}$
Cutting in earth or moorum -	-	-	-	7 $\frac{1}{2}$	„	-	9
Ditto - - rock - -	-	-	1	1	„	-	2 6
Tunnel - - - -	-	21	10	-	„	33	-
Brickwork in arches - - -	-	-	15	-	„	1 10	-
Crossed rubble masonry in arches - - - -	-	6	7	-	„	1 16	-
Ashlar - - - -	Cubic foot	-	1	7 $\frac{1}{2}$	„	-	3 -
Block in course - - -	Cubic yard	-	16	-	„	1 15	-
Coursed rubble - - -	-	-	14	-	„	1 4	-
Rubble - - - -	-	-	9	-	„	-	14 -
Woodwork, teak - - -	Cubic foot	-	4	-	„	-	6 -
Ballast - - - -	Cubic yard	-	1	1 $\frac{1}{2}$	„	-	1 4 $\frac{1}{2}$
Laying permanent roads -	yard	-	2	-	„	-	2 10 $\frac{1}{2}$
Post and rail frames - -	-	-	1	6	„	-	2 -
Dry rubble wall - - -	-	-	2	6	„	-	4 -

37. From Table 4 it will be seen that, while earthwork, brickwork, and masonry differ little in cost, timber is cheaper in Burma; and it may be added that the rates paid for importing ironwork and machinery from England are about the same as those which obtain in the Bombay Presidency, the freight from England to the two ports of Bombay and Rangoon being generally nearly equal.

38. From Table No. 3 it will be seen that of the 245 miles to the British frontier, about 200, or five-sixths, would be through a country presenting no great difficulties; that for the remaining 45 miles there would be considerable difficulties, and that for a portion of that distance they would be very severe. They are, however, such as are not unknown in railway undertakings, and might therefore be overcome, but not without considerable cost, which only a large trade beyond the British frontier would warrant.

39. We have stated that, in our opinion, to construct a railway or tramway between Rangoon and the Pah Choung would, without reference to that trade, at the present time be absurd, but the expenditure of a small sum of money on the improvement of communications in that direction is certainly worthy of consideration; that part of the country to which attention should first be turned being the Beeling and Yonzaleen watersheds and their neighbourhoods. The passage of the last could be reduced from 3,395 to 2,686 feet, or a height of 700 feet, without any cutting or without lengthening the road. In spite of the difficulties encountered, Shans at present drive down to Maulmain and Rangoon caravans of pack bullocks, but these, from the nature of the journey, are lightly laden. By improving the road, there is no doubt that this traffic would be increased, and eventually it might be found advisable to make a cart road. Wheel carriage, which at present is confined to the lower portion of the Beeling valley, would then find its way into the Shan States.

40. Having concluded our report on the last season's operations, it only remains for us to suggest, in accordance with instructions received from the Chief Commissioner of British Burma, the course to be followed during the season of 1867-68, should the continuation of the survey be ordered.

41. It has generally been proposed that the route on arrival at our north-east frontier on the Salween should be continued to the Kaimapyoo Choung, and thence follow the valley of the Salween or Mobyai river, as might be found preferable. By the former, the entire country of Eastern Karennee would be traversed, and the unfriendly disposition of the inhabitants towards the British, as reported by the late Deputy Commissioner, Mr. O'Riley, who visited their country in 1864, would in any case render it advisable to adopt some other line.

42. The advantages to be gained by following the Salween valley are, avoidance of crossing the watershed between the Mobyai and Salween rivers, and also the saving in distance. Against these advantages are to be opposed the hostility of the Eastern Karenees and the character of the valley, which, as far as we followed it through British territory, is barren and too narrow to admit of improvement by cultivation. From Captain Watson's and Mr. Fedden's report of the same valley in higher latitude no improvement in this respect may be expected beyond British territory.

43. We therefore propose that the route should, on reaching the Kaimapyoo Choung, bear westward to the Mobyai valley, ascend it, and thence cross the Salween at the Takaw Ferry, Theinee, or such other point north of Karennee as may be found to be best. This is the route which we should have followed last season had the Chief Commissioner's order for us to proceed beyond the frontier reached us earlier. But, as mentioned in para. 17, we unfortunately did not receive it in time to be of any use.

44. Our chief reason in recommending this route is, that it is the shortest to China by at least 50 miles; and, as there would be very great difficulty in reaching and returning from the Chinese frontier in one season, it is of the greatest importance to proceed by the most direct route, in order that as much time as possible may be spent in examining the most distant portion of the line. The routes west of the Salween can be examined at any time, and can be made dependent on the best route east of that river. If the country there

be impracticable, it will be useless, so far as the China trade is concerned, to continue the survey west of the Salween.

45. Without attempting any close comparison between different proposed routes, which would be both premature and unfair when a portion of one only has been examined, we still think that there are advantages in the line *vid Kaimapyoo* worthy of consideration, which may be thus enumerated :—

1st. That Maulmain may be easily connected with Beeling, and thus brought into land communication with Rangoon, and enabled to share in the trade with China.

2nd. That all difficulties which exist between Rangoon and the Shan States are condensed into one locality, and that within, or immediately bordering on, British territory ; while by any other route, though the line would pass through more favourable country within British territory, the whole of the difficulties, whatever they may be, would occur in foreign States.

3rd. That the line would enter by the shortest route the Shan States, the first country which will prove remunerative, and that thus the unprofitable portion of the line will be as short as possible.

4th. That the line will traverse from its southermost point the fertile and populous Mobyai valley, where no difficulties are anticipated. Captain Watson, Deputy Commissioner, who, in company with Lieutenant Sconce, of the Indian Navy, explored this part of the country in 1863-64, and again, with Mr. Fedden, Geological Surveyor, in 1864-65, writes, on the 7th May 1867, as follows :—

“ From Kaimapyoo, I think that the Salween must be left, and a N.W. direction to the Mobyai river be taken. If we attempt to penetrate Eastern Karennee, the Chief, Tsaulopo, who has never been on friendly terms with the British, would throw every obstacle in our way. Moreover, by going up the valley of the Mobyai, the very centre of the Shan States, or rather, their most thickly-populated part, would be penetrated. I anticipate that between Kaimapyoo and Theinee, latitude 23° N., you will experience no great difficulties.

In another letter, dated 24th May 1867, Captain Watson writes :—

“ From the Kaimapyoo, I feel certain that it would be necessary for us to proceed through Western Karennee to Nguay-doung ; thence to Mobyai, and along the valley of that river right up to Theinee, not more than two days' journey from the Chinese frontier. By this route, the very centre of the thickly-populated portion of the Shan States would be penetrated.”

In the same letter he also writes :—

“ My advice is to steer clear of Eastern Karennee altogether. The Shans of the Mobyai valley are a totally distinct class from those living near the Salween and at Monai. The former are most friendly, and would assist us in every possible way. In the hills on either side reside Tounghoos and Yins, the most peaceable race of people in the States.”

46. Kyekphogyce, the chief of Western Karennee, is, we understand, on very friendly terms with the British, and if communicated with, would, we imagine, be most willing to give assistance through his territory.

47. In conclusion, we beg to record our thanks to Mr. d'Avigdor, who undertook so large a share of the work. But for his exertions in conducting detached portions of the survey, it would have been prolonged into the unhealthy season of the year. As it was, the camp followers were beginning to suffer from the effects of hard work, exposure, and bad food ; and had these been accompanied by bad weather, there is no doubt that the majority would have been “ *hors de combat*,” and the investigation of the country would have been incomplete.

Rangoon, 15 June 1867.

J. M. Williams, Captain.
C. H. Luard, Captain, R.E.

REPORT on the SOUTHERN OF BEELING ROUTE, by *E. H. d'Avigdor*, B.A., C.E.

ENGINEERING FEATURES OF THE BEELING ROUTE.

FROM Sittang to Kyketo the road would present no engineering difficulties whatever. From the hills the ground gradually falls to the river, so that a road could be laid down skirting them, either over gently undulating laterite, or over alluvial plains partially flooded during the rainy season. The latter course would involve low embanking. Spurs from the main ridge of the Sittang watershed extend to Kyketo itself, and the whole line from here to the Beeling river skirts them.

2. The route first examined and marked on the map by a dotted red line has been rejected, as instead of winding round the base of these hills it crosses many of them, and though not one presenting any serious difficulty, the many short but deep cuttings and high embankments would render such a line very expensive.

3. The track marked by a firm red line, though practically level all the way to the Beeling river, is exceedingly crooked. It is a Burman cart track, and winds among the trees with which the country is covered. If a tree falls across the road the Burmese do not remove it, but bend out of the way to avoid it; the track therefore changes after every monsoon, and the numerous bends are oftener caused by fallen trees than by difficult ground. There can, therefore, be no doubt that by cutting a few traces through the jungle, a level line could be laid down from Kyketo to the Beeling river, which would be several miles shorter than the one surveyed.

4. Nine miles from Kyketo the line crosses the Thay-byoo-choung, of which the bed is here 200 feet wide. In the dry weather a little foetid water only flows down it. Between this and the village of Yéoun the route skirts a succession of spurs, and crosses a neck which in fact is the real Sittang watershed; it is, however, so low that the aneroid showed no variation. These spurs and the watershed itself are here laterite, while the hills further to the north on the right bank of the Thay-byoo-choung, on the dotted red line first surveyed and afterwards rejected, are granite.

5. From Yéoun, to about two miles south of Lagonbyoo, the line ascends the Beeling river, first on the right, then on the left, and lastly on the right bank again. Sections of it, taken at the various points of crossing, are given. Between these two points there is not the slightest engineering difficulty; as far as I could judge, no side cutting whatever, and no embankment higher than three or four feet, would be required.

6. Below Lagonbyoo, the line surveyed crosses to the left bank, and soon after leaves the Beeling river. A section of this portion is shown, but the route marked by the green line on the right bank of the Beeling is recommended, although it has not been surveyed. But the result of inquiries, the general appearance of the country, and careful consideration of the maps, led us to believe that there were probably no engineering difficulties on this portion of the route, and certainly no serious ones. The line surveyed from Lagonbyoo to Kyumbin Sakan crosses several spurs from the Beeling watershed; it does not descend any one valley to its head, and must, therefore, evidently present more difficulties than the one up the Beeling river, and its tributary the Man-an-noay-choung.

7. The formations examined consisted of fine close-grained limestone, and the alluvial plains extending from spur to spur are occasionally broken by isolated limestone rocks.

GENERAL REMARKS.

8. The Beeling route passes through several important towns or villages, and would, besides forming a step towards direct communication with Maulmain, open up a valuable district. Between Pegu and Sittang the country is eminently adapted for the cultivation of rice; and though these plains are now among the most productive in British Burmah, they could doubtless be made much more so by a proper system of drainage and communications. There are several villages on this portion of the line, none, however, of any importance, until Sittang, which contains 3,800 inhabitants, is reached. Between this and Kyketo the plains crossed are of a similar character to those on the western side of the river, and are partially under rice cultivation. The route passes near the small villages of Shoaylanbo and Kyketha; the large village of Wimbado, on the bank of the Sittang, is left on the right.

9. Kyketo is a considerable town containing 5,300 inhabitants. There is a colony of Bengalees established here, many of whom trade in cloth, and the Shans, who pass through yearly on their way to Maulmain, probably assist this trade. There is also a Karen bazaar. The Kyketo creek is navigable for large boats, and communicates with the Beeling and Sittang rivers during the rains. The track passes within two miles of the town of Beeling, which contains 5,100 inhabitants, and gives its name to the district, though it is less busy and important than Kyketo. Between the latter and Yéoun there are a few scattered villages, both of Burmese and Karens, none however of any size. The country is almost entirely covered with tree jungle, among which I noticed the wood-oil tree (*Dipterocarpus grandiflora*), the wild fig (*Ficus macrophylla*), and particularly the peema (*Lagerstræmia Pyenma*), in large quantities.

10. Three miles from Yéoun, on the left of the route, is a pagoda on the ridges forming the Beeling watershed: this is a great centre of attraction for the Burmese, who on feast days flock to it in hundreds from all directions. It is surrounded by numerous *zayats*, or rest houses for man and beast, for the Burmese in this district possess numerous buffaloes and buffalo carts. This pagoda is surrounded by magnificent Amherstias (*Amherstia nobilis*).

11. Yéoun is a populous and busy town of 4,800 inhabitants, who employ many buffaloes at their paddy mills, and cultivate a great deal of the surrounding district: above Yéoun, however, the population is much more sparse; buffaloes and carts cease, and the three villages passed (Natkee, Wingalay, and Lagonbyoo) are very small. On the whole the Beeling valley is rich, and I believe almost any cultivation would succeed in it. Rice, tobacco, and betel palms luxuriate, every village is a mango grove, and every clearing produces, spontaneously, fine pasture. Wider and more open than the Yonzaleen valley, it is better adapted for general cultivation. It is less rocky, the river in its windings affords tracts of alluvial soil at each bend, the hill sides are much less steep, and would probably produce anything, from rice to tea or coffee; water is plentiful, and the climate seems healthy. The highest temperature I observed in the hottest month (April) was only 96°, and the mornings were always comparatively cool, 75° being the highest observed at sunrise. Any amount of produce could be floated down on bamboo rafts from above Pahnwatta, and a good road parallel to the river would cost a mere trifle. Peema, iron-wood (*Inga Kylocaria*), and wood-oil trees abound, and in the upper portions of the valley there is said to be teak.

Elim. H. d'Avigdor, B.A.

JOURNAL of the CHINA ROUTE SURVEY EXPEDITION during the Season of 1867.

Rangoon to Sittang; distance, 92 miles.

THE expedition left Rangoon for Sittang by water, on the evening of 31st January. The country between Rangoon and Sittang having been previously surveyed, and being known to be peculiarly well adapted for railway construction, it was not considered desirable to devote any portion of the somewhat limited time within which, from the lateness of the season, our operations must be confined to an examination of this part of the proposed route.

Ascending the Pegu river from Rangoon, we entered the Pyne Kyun creek, which connects the Pegu and Sittang rivers, on the morning of the 2nd February; but to our great disappointment we were detained in the creek by insufficiency of water until the evening of the 6th idem, and only arrived at Sittang on the 7th. Here we ascertained that only 12 elephants had been engaged for our party instead of 18, the number we required.

The difficulty in obtaining elephants appears to have been occasioned by the Bengal Commissariat having just effected the purchase of 120 elephants in Maulmain, which have been sent to Calcutta. The 12 elephants which the Commissioner of the Tenasserim division had with difficulty engaged for us, were hired at five rupees per diem, instead of the usual rate of two rupees. Finding it impossible to procure more elephants, I requested MOUNG HMAT, the Myo Oke, to engage carts to assist in carrying our baggage at least as far as Kyketo.

February 9. Sittang to Kyketha; distance seven miles.

Left Sittang at 7.30 a.m., and marched to Kyketha, distance seven miles south-east. The first three miles of the road passes over undulating laterite soil, covered with bamboo and tree forests, occasionally alternating with alluvial plains, the last three miles being entirely through the plains, which are only partially cultivated.

At Shway-lan-boh, distance about five miles and a half from Sittang, there is a substantial timber bridge across the creek leading from Wimpadow, on the Sittang river to Kyketo; by this creek, during six months in the year, boats of six tons burthen are able to pass from Maulmain into the Sittang river, and thus avoid the dangerous navigation of the mouth of the Sittang.

February 10. Kyketha to Kyketo; distance, eight miles.

Left Kyketha at 6.40 a.m., and arrived at Kyketo, distance eight miles, at 9 a.m. The road passes chiefly across rich alluvial plains, skirted by tree and bamboo forests on laterite soil. Amongst these forests the *Thitsee-ben* or wood-oil tree abounds. The oil from this tree makes an excellent black varnish, much used by the Burmese in rendering waterproof their bamboo baskets, used for drawing water, also their hats and other articles.

The road throughout from Sittang to Kyketo is very good and level. By avoiding the village of Kyketha the distance would be shortened about one mile, and a superior line be obtained.

February 11. Kyketo to Kuwai-thay-choung; distance, eight miles.

Left Kyketo at seven a.m., and reached Kuwai-thay-choung, distance eight miles, at 10 a.m.; the road very good throughout, over laterite soil, and through tree forests; amongst the trees I observed mango, anaibo and pyen-gadow.

Four of the classies missed the road; unfortunately they were carrying the chronometer and mountain barometer; the former, however, is an eight-day chronometer, and was wound up on Saturday.

There is no cart road beyond this point, carts not being used in the Beeling and Yonzaleen valleys; as we can get no more elephants, nor a sufficient number of coolies to carry our baggage, we can only take on 12 days' supplies and three tents. The loads these elephants carry are ridiculously small; they are not provided with pads, but small basket howdahs; all our stores and baggage were packed for convenience of carriage in one dozen cases, and yet six of these form a load for one elephant; two sepoy's tents without the poles or pegs form a heavy load for another elephant.

February 12. Halted.

Halted, as the missing classies have not made their appearance; sent a letter to the Myo Oke, of Kyketo, desiring him to have search made for the men, and send them to our camp. Despatched Ahfoke with stores, baggage and one tent to Beeling, with directions to take them by water to meet us at Pahwatta. I also sent back one tent to Sittang, as it is impossible to take it on with our few elephants.

elephants. Engaged 30 Karens to cut a trace to our next halting place, and visited several Karen villages in the vicinity of our camp.

The elephants being unable to carry even our reduced baggage and stores, we were obliged to leave a portion on the ground. We left the camp at 6.40 a. m.; the road had been well cleared by the Karens for about seven miles, but beyond this distance the jungle was too dense for the elephants to proceed; we were therefore compelled to return to Kadeebaulay on the Thai-byoo-choung, distant from Kuwai-thay-choung, about three miles. We sent back six elephants to bring up the baggage from our last camp; road good.

February 13.
Kuwai-thay-choung to Kadeebaulay; distance, three miles.

From inquiries made, I ascertained that by following the course of the Thai-byoo-choung for some distance, and then striking off eastward we should avoid two miles over which the trace of yesterday passes; we therefore decided to follow the former route, and proceeded along the Thai-byoo-choung, about two miles to the village of Choung-gwai; we then struck into a path leading in a north-easterly direction for two and a half miles, when we again emerged on the Thai-byoo-choung, at the village of Thekay-gyen. The latter portion of the road crossed some undulating ground not so favourable as that we have hitherto seen, but presenting no great difficulties, though requiring judgment in selecting the best line for a road or railway.

February 14.
Kadeebaulay to Thekay-gyen; distance, four-and-a-half miles.

We halted at Thekay-gyen, as the tsaukay informed us that more coolies would be required to clear the line in front of us. The classies, with the chronometer and barometer, arrived in camp, the instruments being quite uninjured.

Before leaving this morning, the first packet of letters that we have yet received since leaving Rangoon was brought into camp. We were unable to make a start until 7.45 a. m., as the tsaukay did not bring a sufficient number of coolies to assist in carrying our baggage in addition to clearing the trace. On leaving Thekay-gyen, the path bore off eastward from the Thai-byoo-choung; we shortly ascended the side of a hill, to a height of about 80 feet above our last camp, and continued over undulating ground for about three miles, the road generally very fair, but much closed in by bamboo jungle; the few slight ascents and descents on this portion of the march were unimportant; nearly all might be modified, if not entirely avoided.

February 15.
Thekay-gyen to Pyen-cha-choung; distance, six miles.

We now approached the watershed of the Thai-byoo and Beeling rivers; the ascent, gradual at first, soon became rapid up the ridge of a spur; we ascended this spur to a height of 300 feet above our last camp, or 560 feet above sea level, the ascent being made in about a quarter of a mile; this height may be taken as that of the watershed at the point we crossed, for though we ascended shortly afterwards a further height of 50 feet, it was clearly an unnecessary ascent; but the jungle was too thick for us to deviate from the path without cutting a trace for which we had not a sufficient number of coolies.

On arriving at the height of 300 feet above mentioned, the track continued on very fairly level ground for some hundred yards; to our right, or south, the ridge was much narrower, and the descent to the Beeling valley from the highest point of the road, about 600 feet above sea level, to our camp on the Pyen-cha-choung, 174 feet above sea level, was made in a distance of three miles; but in many parts it was steep and difficult from the number of course granite boulders on the side of the hill; the descent was further rendered unnecessarily tedious from the several steep rises and falls over small spurs or shoulders extending to the Pyen-cha-choung, all of which might probably be avoided by keeping near to the course of that stream. We also observed that the descent might have been rendered more gradual by taking the road northwards along the side of the watershed, instead of at right angles from it.

The introduction of a tunnel of 300 yards through this watershed would resolve all the difficulties, and be probably the simplest way of overcoming them.

We were unable to leave camp so early as we desired this morning, only nine coolies having arrived, others followed later, and at 7.40 a. m. we moved off the ground, crossed the Beeling river at Nat-kyee, four miles distant from our last camp, and proceeded thence about one and a half miles to Wimpadeik, on the left bank of the Beeling river, where we halted. Near Nat-kyee we passed a small cotton plantation, the plants appeared very healthy.

February 16.
Pyen-cha-choung to Wimpadeik; distance, four-and-a-half miles.

The road throughout to-day's journey was very good and level. On the right bank of the river, a little below Wimpadeik, the hills rise rather abruptly from

the river's bank; we had been informed when at Sittang that we must cross these hills between Nat-kyee and Win-ga-lay; it had never occurred to our informants that we might avoid the difficulty by simply crossing the river.

The Beeling river at our camp is about 550 feet broad, water very clear, mean depth about two and a half feet, with smooth sandy bottom; boats of about two tons burthen ascend from Beeling to Win-ga-lay throughout the dry season.

On arriving in camp we found Ahfoke, who had just arrived with our baggage from Beeling. He had been rather afraid of being attacked by dacoits, as he had heard that there was a party of eight or nine in the vicinity; I directed him to proceed to Win-ga-lay, and there await our arrival.

In the evening the tsaukay reported that the coolies would not leave their villages and come into camp to-night, as they did not like to be absent from their families while the dacoits were in the district, but that they would arrive in the morning.

February 17.
Wimpadeik to
Wingalay; dis-
tance about seven-
and-a-half miles.

Only two coolies came into camp this morning with the tsaukay, who stated that two villages had been attacked in the night and robbed. We placed as much baggage as possible in a boat, which we hired for the purpose, and then started from camp at 7.40 a.m. At the outset we had to cross a nullah, about 50 feet in breadth, with excessively steep banks and muddy bottom; we rode our ponies down one side, but found it impossible to ride or even lead them up the other; my pony nearly fell backwards in attempting it. We then set to work to cut away the bank to some extent, and after great exertions succeeded in getting the ponies over. The elephants were obliged to ascend the bed of the river in search of a better place of ascent. The road continued on the right bank of the river, and was throughout very good and level; we ascended one small hill about 100 feet above the plain, but it might easily have been avoided. At about six miles from Wimpadeik we crossed the Beeling river, and proceeded about one mile along the right bank to Win-ga-lay, passing a caravan of Shans, with pack bullocks *en route* to Maulmain. We observed on our march both cotton and tobacco flourishing.

The inhabitants in all the villages are very much in fear of the dacoits, who appear to be making a raid throughout the Beeling valley.

Halted in order to bring up arrears of plotting, and to rest the camp.

February 18.
Halted.

During the day a policeman, one of a party of four who had been sent after the dacoits, came into camp wounded by a bullet through his thigh; he was shot this morning about five miles from our camp. We wrote letters to Rangoon, but had great difficulty in getting them despatched, as the villagers are all frightened, and do not like to move from their houses, leaving their families without the little protection their presence might afford them; but when I promised to write to the police inspector at Beeling, and acquaint him with the unprotected state of the place, the villagers became so much interested in the despatch of the letters that they subscribed amongst themselves three rupees to induce a messenger to go; of course I did not allow this, but paid the man myself.

We shall be unable to proceed to-morrow, as we can get neither coolies nor boats in consequence of the people being afraid to leave their villages.

A party of Shan traders arrived this evening on their way to Maulmain.

February 19.
Wingalay, halted.

Halted and sent to the tsaukay of the adjoining district for coolies; only five, however, arrived. Sent Ahfoke on with the boats to Lagonbyoo.

February 20.
Wingalay to La-
gonbyoo; dis-
tance, 11½ miles.

During last night four of our elephants ran away. We loaded all we could on the remaining elephants, leaving a guard of three policemen in charge to bring on what we left, with the elephants, whenever they might arrive. We then started at seven a.m., and marched northwards on the right bank of the river, about nine miles, the road excellent, through bamboo and tree forests. Met a large caravan of Shans with pack and slaughter bullocks for sale, also three elephants; the latter I endeavoured to engage, but we were unable to arrange matters on the spot, the owners wishing to consult together, so I continued my march, telling them that if they decided to accept my offer they might bring the elephants into camp.

After crossing the Beeling river at nine miles from Wingalay, we proceeded along the left bank about two and three-quarter miles to Lagonbyoo. The road for the first portion of this latter distance was excellent; it then passed two low but steep hills, the last especially so in its descent to Lagonbyoo; both might, however,

however, be avoided by keeping the line near the river bank, or, better still, by crossing the river.

We arrived at Lagonbyoo, where there is a *zeiyat* or rest-house at noon; the elephants did not come into camp till three p.m., the distance from Wingalay being 11 miles and three-quarters.

Left Lagonbyoo at 7 a.m. Marched over an excellent and well-defined road through tree and bamboo forests, about three miles, where the road to Pahwatta diverged to the left of the main road.

February 21.
Lagonbyoo to
Pahwatta; dis-
tance, five miles.

Pahwatta being a police station, and hence important in keeping up our communication, we left the main road for future examination, and following the path to the left, shortly commenced the ascent of a long and occasionally very steep hill; the total height attained was about 420 feet above sea level, or 290 feet above the valley. This ascent might be avoided by taking the trace along the river bank by a side cutting, or better still, by crossing the river, as suggested in my journal yesterday, south of Lagonbyoo, and continuing the line on the right bank of the river to Pahwatta.

The principal height being once attained, the ridge line was very good indeed for a distance of upwards of one mile; the descent, however, to Pahwatta was very steep.

I understand that the main road from which we diverted is a valley line, and as it must be shorter than the route *viâ* Pahwatta, it is desirable that it should be examined.

Ahfoke arrived here to-day with the boat of stores; from this point we strike eastward from the Beeling river, and can therefore receive no further assistance from boats, and as there is a difficulty in hiring elephants, we must halt here to-morrow to make arrangements for carriage.

This morning one elephant came into camp, and about 20 coolies; however, we must still halt till to-morrow. Mr. Simon, the surveyor, who has been of most invaluable assistance to our party, and never appears to consider any work too hard for him, proceeded to survey the road towards Pahpoon to its junction with the main road. The distance proved to be about four miles; the road good.

February 22.
Pahwatta; halt.

We despatched letters to Rangoon by the baggage boat returning to Beeling, and sent back another tent.

I made inquiries regarding the possibility of finding a route from this towards Thayet-thamine, on the Sittang, which, if practicable, would effect a considerable saving in distance on even our present route, probably not less than 20 miles. Some years ago I marched from Shoay-gyeen to the May-wine-choung, which falls into the Beeling river a little north of Pahwatta, and, by skirting the Thekay-doung, met with, as far as I can remember, little difficulty. This route would not, however, be so direct as the one *viâ* Thayet-thamine.

I have offered a bonus of 20 rupees to any man who will cut a trace along the May-pan-choung to the Moo-tama-choung, in addition to the cost of labour, provided it avoids every ascent it is possible to get round, and that the trace be cut broad enough for loaded elephants to pass along by the time we return from the Pah-choung.

The Moo-tama once reached, I anticipate little difficulty in getting a line to Thayet-thamine, and this would prove by far the shortest route from Rangoon to Pahpoon.

Captain Luard not being very well, accompanied Mr. D'Avigdor by the direct road towards Pahpoon. I returned with Mr. Simon to the point of divergence of the main road south of Pahwatta, and proceeding along it found it to be certainly superior to the line to Pahwatta. In the first half mile there were two slight ascents about 90 feet each, which seemingly might have been avoided. At the second mile an ascent of 200 feet was made, and for about one mile the road continued at this level on the side of a hill, with a valley line on the left; thus the ascent might have been made very gradually.

February 23.
Pahwatta to Ka-
nay-kaw; dis-
tance, six miles.

As far as I could judge, a narrow neck extends from the hill near Pahwatta, across this road, to the main watershed of the Beeling and Yonzaleen valleys; in which case the ascent thus made cannot be avoided, though, as remarked, it might be modified: the neck itself was very narrow. Altogether I am inclined

to think that the best line will be from south of Lagonbyoo, on the right bank of the Beeling river, to Pahwatta.

Our present camp, Kanay-kaw, is distant from Pahwatta six miles, and the direct road very good.

Five laden elephants and a caravan of Shan bullocks passed us to-day; two more elephants also joined our camp, so that we have now nearly as many as we require.

February 24.
Kanay-kaw to
Wimpa-oudo-
oudo; distance,
10½ miles.

Started at 7 a.m. First mile and a half very good and level, the road well defined; it then passed over undulating ground for about six miles formed by the projecting shoulders or spurs from the range of hills on our right; to our left extended a broad valley, which might with advantage be made use of in laying out a road. The path, towards the end of our march, gradually descended to this valley, and the last mile and a half into camp at Wimpa-oudo-oudo on the Mana-noay-choung were very good and level.

The distance of this camp from Kanay-kaw is 10½ miles.

February 25.
Wimpa-oudo-oudo
to Pahpoon; dis-
tance, 10 miles.

Left Wimpa-oudo-oudo at 7.30 a.m.; the road very good for about two miles; beyond this, though still continuing fairly level, it was broken up by watercourses, which, in the absence of bridges, were troublesome to cross. These streams flow from the watershed on our right down to the Mana-noay-choung, which discharges into the Beeling river about 18 miles north of Pahwatta. At about six miles from our last camp our route bore eastwards towards the watershed, which we commenced ascending by a spur to a height of about 700 feet above sea level; we then descended about 50 feet, and crossed the head of a valley, and again ascended to a height of about 900 feet above sea level, the hill on our immediate left being a few feet higher; while on our right extended a deep valley, the ridge line at the head of which was a few feet lower than the ground on which we stood, with very narrow steep, almost precipitous descents on both sides; it might consequently be cut through without much difficulty, and thus the height necessary to be attained reduced considerably.

The descent, however, into the Yonzaleen valley is abrupt and difficult, and does not offer any apparent facility for improvement.

We crossed the Yonzaleen river, at the foot of the watershed, about one mile south of Pahpoon, the path leading over level ground through a teak plantation.

On our arrival at Pahpoon we were enabled at a glance to perceive that we had crossed the watershed at the very highest point within view; while opposite the town there was evidently a more convenient point of considerably less altitude; and, on making inquiries, I was informed that there was a still lower point about two miles north of Pahpoon.

This watershed is the first serious difficulty we have met; and though it could of course be overcome by a tunnel, yet it is of quite sufficient importance to render a halt at Pahpoon necessary, in order that we may thoroughly examine the country and ascertain whether a better line may not be adopted.

February 26.
Halt.

Halted to bring up arrears of work, and make inquiries from the natives regarding different routes.

February 27.
Halt; examined
the watershed of
Yonzaleen.

Started this morning to examine the route over the Yonzaleen watershed, referred to in my journal of 25th instant. We proceeded rather more than two miles up the left bank of the Yonzaleen river, over generally a fair and level road, occasionally broken up by watercourses; then, fording the river, we struck into a path on the right bank, leading at first in a southerly direction for a few hundred yards, and then bearing westward. In about a mile and a quarter we gradually, and by a fair road ascended to the watershed, which we found to be 500 feet above sea level, or 280 feet above the level of the valley at the ford. The point which was ascertained to be 500 feet high was on a narrow neck or saddle of the ridge line, separating two gorges which sloped steeply down towards the valley on either side of the ridge; this saddle is not above 30 feet in breadth, and by a very moderate cutting the summit of a road might certainly be reduced 100 feet, or to 180 feet above the valley; this might then be reached by a gradient not exceeding 1 in 50, and probably not more than 1 in 100, as it would be quite unnecessary and unadvisable to cross the

Yonzaleen

Yonzaleen at the ford; the most convenient point being probably two miles at least to the north; the broad flat shoulders from the hills would enable the base of descent to be extended to a reasonable length.

On reaching the watershed we pushed northward along the ridge and discovered two other convenient points for crossing the range, within a distance of 300 yards; the more northerly being 20 feet lower than the one we first examined.

The difficulty of the Yonzaleen watershed may now fairly be considered as solved; it presents certainly much less difficulty than that of the Beeling river.

Halt. I sent out Mr. Simon to survey the road we examined yesterday. February 28. Wrote to Rangoon requesting that an additional surveyor be despatched to Halt. arrive at Pahpoon by end of March, bringing with him another perambulator. We shall probably arrive at the Salween watershed on our return journey at the beginning of April; and if we should have any difficulty in getting a good line, the services of a second surveyor will be invaluable in order to ensure a thorough examination of the country.

Left Pahpoon at 7.30 a.m., and proceeded to Takautha, on the left bank of the Yonzaleen river, distance eight and three-quarter miles; road excellent and well cleared, evidently much used. March 1. Pahpoon to Takautha; distance, eight and three-quarter miles.

Started at 7 a.m. by an excellent road for about four and a half miles; it then passed up a valley laid out in a succession of terraces prepared for rice cultivation. This is the first instance I have observed in Burma of the ground being thus artificially prepared for rice crops.

At a distance of about five and a half miles the path, to avoid a steep projecting shoulder of limestone rock, skirted the bank of the river, and for about 300 yards was very rough; we then passed through extensive *toungya** cultivation, and again descended to the river, where the end of a spur from the main Salween watershed rises so abruptly from the Yonzaleen river, that here it is only possible to proceed along the bank on foot; elephants and ponies having to cross over the spur.

We ascended the spur and found it to be 450 feet above the plain; the ascent and descent were both exceedingly steep and difficult. It appears probable that the best direction for the road would be the right bank of the river instead of the left, or at least that it should cross to the right bank four and a half miles north of Takautha, and so continue beyond the spur last crossed.

We encamped at the foot of the spur, on the bank of the Yonzaleen; distance, five and three-quarter miles from Takautha.

Left at 7.15 a.m., and arrived at Menga Sakan at 9 a.m.; distance, five miles. For the first three and a half miles the road proved to be very good indeed; it then passed near to the river bank, on ground that must during the rains be flooded; this was quite unnecessary, as there was very good level ground immediately on our right. Beyond this a shoulder of the hill projecting to the bank of the river rendered it necessary either to ascend or walk along the very narrow berm on the river bank over boulders; we accepted the former alternative, and though we attained probably no greater height than 60 feet above the valley, yet the ground was much broken, the rises and falls being steep and difficult; this continued over a distance of about half a mile, though the direct distance would be less as the road was tortuous. March 3. Camp on Yonzaleen to Menga Sakan; distance, five miles.

We passed through a larger area of *toungya* clearing than we have yet observed; much of it appears to have been out of cultivation for some time, but its extent bears evidence to the population having been larger a few years ago than at present. We noticed several new clearings, but not on the same extensive scale. The disturbances during the Meng Loung rebellion in 1866-67 must have tended greatly to depopulate this district.

Near Menga Sakan we noticed on the right bank of the river some magnificent specimens of *pyengadow* (ironwood); I estimated one tree to be fully 80 feet high up to the first branch.

Halted

* Rice cultivation on hill sides.

March 4. Halt. Halted the camp; proceeded to cut a trace up the Kolothau valley to the eastward of the spur by which the bullock road leads to the summit of the watershed. The valley rises very gradually; but the jungle being dense, we had only cut about three quarters of a mile by 9.30 a.m. We then returned to camp, leaving instructions with the tsaukay to complete the trace as far as possible, that we may examine it to-morrow. An hour after our return to camp, the tsaukay and coolies made their appearance, declaring that they had completed the trace as far as it was at all possible for either men or elephants to proceed.

March 5. Halt. March 5th. Captain Luard and I proceeded up the Kolothau valley to examine the trace; we found that the coolies had only cut about a quarter of a mile after we left them yesterday. The difficulty which they had stated to be insurpassable for elephants was merely a boulder of rock in the middle of the stream; we passed round it and continued the trace another mile, a very gradual ascent the whole way; in two miles we ascended only 250 feet. At this point we came upon a recently made *toungya*, so that the Karens must have known the ascent of the valley to be possible; yet for some reason they have opposed it by every means in their power, assuring us that there were insurmountable difficulties.

We cannot afford to halt here another day, so have directed the tsaukay to cut the trace up the stream to its source, and thence to the ridge of the watershed, so that on our return from the Pah-choung we may be able to come down it, if practicable, I promised the tsaukay a present in addition to the cost of the labour, provided he does the work well.

March 6. Menga Sakan to Pinlayben; distance, nine miles. Left camp at 6.30 a.m. Found the road, which for the first five miles leads along the ridge of a spur forming the western watershed of the Kolothau valley, to be better than I had anticipated. Steep ascents followed by stretches of comparatively level ground, repeated in regular series, formed the character of the ascent. At the distance of four miles, which our guide assured us was the highest point, although not on the watershed of the main range, we stopped to check by boiling point of thermometer the altitude taken with the barometer. The result by the boiling-point process showed an altitude of 2,900 feet. The mean of the readings of the barometer, after correction for atmospheric wave and temperature, gave an elevation of 2,888 feet. We had not proceeded half a mile when we perceived that our guide had been mistaken regarding the highest point, as we had now reached an altitude of 3,032 feet.

The spur by which we had ascended to this point appears to offer facilities for the construction of zigzags, should they be found indispensable in order to obtain a sufficiently easy gradient. About a quarter of a mile further on, pushing through the jungle to our right, we were glad to see, at a considerably lower elevation, what is evidently the watershed of the range.

This is most satisfactory, as all the maps and reports we have seen show the watershed of the Salween, by this route, to be 3,393 feet above the sea.

I always anticipated being able to discover a point somewhat lower, but hardly 700 feet lower, as I estimate this to be. We were unable to decide this by actual observations, as we were assured that there was no road leading to the spot, and without coolies we could not cut a trace. We have therefore resolved to return to-morrow.

On continuing our march, we commenced at once a steep and long ascent for about one and a half miles, the summit of which was found to be 3,395 feet above sea level. This is the highest point of the road, and is probably that which has hitherto been considered as the watershed; a mistake, for the path has already crossed the watershed at a lower elevation, while this point is on the slope of the hill, the actual watershed being several feet higher.

From the extreme height thus attained, the descent to Pinlayben is exceedingly rapid, and so steep that it was difficult to avoid running. This is the most abrupt descent we have yet met with.

At first it appears singularly absurd that when a watershed can actually be crossed at an elevation of about 2,700 feet, the principal path in the country should ascend not merely to 3,400 feet, but pass over several subsidiary heights, involving useless ascents and descents of 300 or 400 feet each; but this may perhaps be accounted for from the fact of the roads being originated by one or
more

more Karens, who, passing from village to village through primeval forests, naturally find it easier to wend their way through the lighter undergrowth which exists on the hills than through the dense jungle with which the valleys are generally choked. That they ascend by the shorter line to the summit is also easily explained, as there is no labour expended in forming the road beyond that of cutting the jungle; whereas a path on the steep side of a hill, to be convenient for men and possible for elephants, would be constructed with considerable labour; the summit of the spurs or ranges being once attained, the ridge line is generally found to be a comparatively level road.

Halted camp. Started with Captain Luard to examine the valley line to the watershed. There was no evidence of any path leading up the valley, and the brushwood was so dense that we could not get through without cutting a trace; we were therefore compelled to ascend by walking up the bed of the stream. March 7. Pinlayben; halt.

The ascent was gradual for two miles. At the end of the first mile we had ascended, approximately, 200 feet; in the next three quarters of a mile, 200 feet more; in about the next quarter of a mile we ascended 300 feet, though of this last distance I am by no means certain, as the perambulator was behind, and we were so troubled with heat and flies, that we pushed on the remaining quarter of a mile to the water-shed. This we found to be 2,800 feet above sea level. The height may probably be reduced 400 or 500 feet by a tunnel of moderate length.

Menga Sakan is 540 feet above sea level; the distance, roughly estimated to the head of the valley is six miles; and the height to be ascended after allowing for a reduction by tunnelling of 500 feet, is 1,600 feet, or 1 in 20. It appears, however, that there would be little difficulty in increasing the base of the ascent.

Altogether this line promises so well, that Mr. D'Avigdor remains at Pinlayben to make a careful survey of the ground, while Captain Luard and I proceed to the Pah chong.

It is worthy of remark, that so far from there being no road leading to the watershed, as we were yesterday informed, there is a well-defined path leading directly along it, into which we struck immediately we reached the summit. It joins the main road to Pinlayben, and by it we returned to camp.

Leaving Mr. D'Avigdor at Pinlayben, Captain Luard and I started at 6.30 a.m., and arrived at Saudoolau at 8.30 a.m. The road was a gradual ascent the whole way; crossing and re-crossing the stream too frequently to be pleasant travelling, but otherwise good. March 8. Pinlayben to Saudoolau; distance, five miles.

Saudoolau is approximately 881 feet below Pinlayben; the natural gradient of the valley is about 1 in 33; this might, if desired, be reduced.

Our encampment is situated on the right bank of the Saudoolau chong immediately above its junction with the Myinta-bye chong.

We left camp at 6.30 a.m., and proceeded up the valley of the Saudoolau chong for three and a half miles; in this distance we only ascended 133 feet. The valley is, comparatively speaking, broad, and the road good. We then left the stream and ascended a steep hill 860 feet to the highest point of the road, and then descended slightly for a quarter of a mile to Kolodo, which is situated on a watershed 1,927 feet above sea level, and is distant from our last camp four and three-quarter miles. March 9. Saudoolau to Kolodo; distance, four and three-quarter miles.

The last one and a quarter miles have proved to be about the most difficult we have yet encountered, and at first sight it does not appear easy to obtain a better line.

We might ascend the Saudoolau stream further, then endeavour to cross the hill at a lower point to the Padee chong, and descend its valley to the Salween; or we might follow the valley of the Saukrie, a tributary of the Saudoolau east of Kolodo, and thence into the valley of Padee chong. Failing these routes, which we intend to examine to-morrow and next day, we must proceed to the Pah chong and descend the Salween to Myinta-bye, when, if we find that route possessing greater difficulties, we must again return to the vicinity of Kolodo and continue our investigations in its locality.

Halted camp, and returned by our route of yesterday to the Saudoolau chong, one and a quarter miles south of Kolodo. We then proceeded up the stream, March 10. Halt. Examined the Saudoolau chong surveying or "west trace."

surveying and taking sections for two and a quarter miles; in this distance we ascended 192 feet. We then struck off from the stream into a gorge which I observed last evening to ascend to a neck in the watershed 1,876 feet above sea level, and about 50 yards south of the Kolodo stockade. The distance up this valley or gorge is nearly one mile, and in this distance we ascended 675 feet. In the first 300 yards the gradient was only 1 in 250, and in the first 800 yards it only amounted to 1 in 19. A road or railway, however, would not enter the gorge at a lower elevation than 50 feet at least above the stream; a gradient of 1 in 34 would reach 820 yards; and then after a cutting of 50 yards, a tunnel of 300 yards would reach the centre of the hill below the watershed. Whether double this length of tunnel would prove sufficient to pierce the hill must remain to be proved by our examination of the descent to the north.

In the evening I went along the ridge north of Kolodo in order to ascertain whether there might be any lower point than that we have examined, but found none as low or as promising. I then went some distance down the valley we proposed to examine to-morrow, and found it to be the same that we must follow *en route* to the Pah choung, so we have decided to survey it when we advance, and to examine the valley of the Saukrie to-morrow.

For sake of distinction I call the trace surveyed to-day the "west trace."

March 11. Halt.
Examined the
Saukrie valley
or "east trace."

Camp halted. We returned to the Saudoolau choung and descended its valley nearly a mile to the junction of the Saukrie with the Saudoolau choung. We then ascended the valley of the former for four miles to the watershed; this is favourable and the ascent gradual till within a short distance of the watershed, where it suddenly becomes very steep.

The valley presents every facility for obtaining an easy gradient throughout, the only doubt is whether we can obtain a sufficient length of base for the descent to the Salween; this I fear is doubtful, and must be left for the future to decide, as we must leave the survey of the descent till we have moved our camp from Kolodo to the Salween.

We returned to Kolodo along the ridge line, and observed several points where it might be possible to get a line through, but we shall not have time to survey all.

We selected one narrow neck within a quarter of a mile of Kolodo which appears favourable, and which would ensure a longer base of descent, though the ascent will probably not be so good; this I call the "centre trace," while that we examined to-day is named the "west trace."

March 12. Halt.

Halted to plot up field work and take observations. In the morning I examined the ridge we propose to cross to-morrow, and walked along the watershed, examining the direction of the several valleys. Despatched letters to Rangoon.

In the evening read Mr. O'Riley's report of his mission to Karennee, *vide* selections from the records of Government of India, Foreign Department, No. XLVIII.; I cannot altogether endorse the opinions he expresses.

He observes that 16 marches were occupied "in ascending and descending the series of mountain ranges which separate the Pah "Nga" and Kyaymapyoo choungs," &c.—"these hill systems in confused and broken masses cover the space between the Sittang and Salween rivers, in some instances rising to the altitude of 5,000 feet." He then remarks on his return journey *via* Kolodo to Pahpoo as follows: "When passing the steep acclivities on the outward route, I concluded that no more inaccessible paths could possibly exist by which loaded cattle could travel than those encountered, but I can safely aver that the line from Pahpoo to this (Shoaygheen probably) is considerably more difficult than the former, and that, for any practicable purpose of wheel carriage, the proposed scheme of Captain Sprye must be dismissed as impossible." The section of the line which we intend to submit will show how great the difficulties were. On other matters his report appears to be a valuable paper, and contains an amount of important information that we, unaccompanied by a civil officer, would have found it impossible to obtain.

March 13. Halt
and examined
"centre trace."

Proceeded to take the section of the "centre trace," which at first promised well, but after completing one mile, gave it up as too difficult for our purpose. The examination of these valleys has been downright hard work, and though to-day

to-day we were back in camp by 11 a.m., which is earlier than usual, the day's work seemed harder than any we have yet undergone; at all events we felt it more, probably owing to the unsatisfactory result of our day's labour.

Resuming our march we left Kolodo by the ordinary path to the Pah choung, and which forms the continuation of our "west trace."

The first two miles led through a narrow gorge, unworthy the name of a valley, and passed over rather rough ground; we then entered the valley of the Padee choung, or river, and for the next five miles the road was good, the valley being of greater breadth.

At the junction of the Nameloo stream with the Padee, distant about six and three-quarter miles from Kolodo, we ascended the valley of the former northward, and encamped on the left bank of the stream, about one mile from its junction with the Padee.

Our march to-day has been a most unpleasant one—no shade could be obtained; not a green leaf was to be seen on the trees, while all the undergrowth and brushwood has been burnt up, and the surface of the ground is perfectly black from the detris of the fires. Since crossing the watershed of the Salween, near Pinlayben, we have observed the absence of the luxuriant foliage we had previously been accustomed to. The only trees appear to be teak and bamboo, and of these there were no lack, though the former are very small, and all at present utterly devoid of foliage, making the appearance of the country desolate in the extreme. Surveying in it with the thermometer at 125° is certainly trying.

Returned to the Padee river, and descended its valley to the Salween, by a good road, fairly level, over flat spurs.

We encamped on the south side of the Padee-choung; here the current of the Salween is very rapid; the difference of level between its present surface and flood level appears to be 62 feet.

Here is plenty of space on the right bank of the Salween for the construction of any road, but how far this may continue to be the case has yet to be seen.

Returned up the valley of the Padee to its junction with the Nameloo, in order to take the section from this side of our "east trace." We encamped at Nameloo and started off to examine the trace, but found that the Karens had taken the line up a spur, and that the stream from the watershed does not enter the Padee valley, but falls into the Salween. Having marched a distance of four miles we returned to camp, feeling that it would be useless to proceed further, and that we must leave the exploration of the valley line until our return to the Salween from the Pah choung.

The path we followed up the spur was most difficult, both on account of its steepness and its being so narrow, that walking on the hill side became a difficult operation.

Proceeded up the Nameloo-choung five miles to Choung Gwai Sakan; during the first three miles the road was good, and for the whole distance very fair.

Choung Gwai is the junction of two valleys or gorges; the principal stream is on the one from the north-west; the other, which we have to follow to-morrow, takes a direction nearly due north, and is at present dry.

Ascended the gorge by the dry bed of the stream for a little more than a mile. At this point the gorge divided east and west, while the path led up the intervening spur by a very steep ascent to almost the highest point of the watershed. The ascent was extremely steep, but we observed that the gorge to the eastward had a very gradual incline, and that the watershed at its head appeared to be very considerably lower than the point to which we ascended. I therefore walked along the ridge line till I arrived at the head of the gorge, and found the elevation to be only 1,605 feet above sea level, or 287 feet below the spot where the road crossed, while on either side of the narrow saddle forming the watershed at this point the ground fell away very steeply. I went down the south side to take the section, and had the greatest difficulty in doing so on account of the steepness of the hill. I then endeavoured to descend the north side, but found it impossible to do so. I therefore returned by the path and descended the spur to the valley on the north. Captain Loard, who was not feeling well, went on

March 14. Kolodo and Nameloo-choung; distance, seven miles.

March 15. Nameloo-choung, the Salween river at the mouth of the Padee; distance, four miles.

March 16. Salween to Nameloo; distance, three miles.

March 17. Padee to Choung-gwai Sakan; distance, five miles.

March 18. Choung-gwai Sakan to Pah choung; distance, five miles.

to select an encamping ground, while I went up the valley to complete my section of the watershed.

For 300 yards the ascent was gradual; it then increased and finally became so steep that it was with much difficulty that I could proceed. I had nearly reached the desired point, when on climbing the side of the gorge to avoid some difficult boulders I fell on them and was severely bruised, but succeeded in completing the section. My return journey was more difficult, as I was becoming stiff from the effects of my fall. I narrowly escaped a more severe accident, but fortunately, as I was falling, a creeper caught my watch-chain which broke, but in doing so checked my fall sufficiently to enable me to recover myself.

There would not be much difficulty in overcoming the watershed, it is so steep and narrow that it could readily be cut through, but the after descent to the Pah chong, though not difficult as to its gradient, is very bad. The valley is not only narrow but very tortuous; the line might be improved, but it would be troublesome and expensive.

We are encamped on the Pah chong, the most northerly point which we shall reach this season.

March 19.
Marched down to
Pah chong; dis-
tance, six and a
quarter miles.

The path was very fair through to-day's journey as to gradient, but it was inconvenient as it crossed and re-crossed the Pah chong upwards of 20 times, generally to avoid a spur on one side and take advantage of low level ground on the other of the river. Eight crossings, however, and probably more, might well have been avoided. We passed through a considerable extent of old and new *toungya* cultivation; some were being prepared to receive the approaching season's sowings. We observed much more cultivation on the Karennee than on the British side of the river.

March 20. The
valley of the Pah
chong of Sal-
ween; distance,
four and a half
miles.

Marched to the Salween. Character of the valley much the same as on yesterday's journey, occasionally narrow and tortuous, but in general very tolerably wide and the road level; we crossed the stream 16 times, most of these crossings being obviously unnecessary.

We have now an approximate section of every route and trace that we have examined from Pinlayben to this point. As such a section of the entire line will be very valuable in affording a general idea of the extent of the difficulties and the gradient that can be obtained to overcome them, we have decided to continue the plan on our return journey, and as Captain Luard and I propose to return from Pahpoon by another route, it will be necessary for Mr. D'Avigdor to return by the route we came, taking with him the surveyor, who will have arrived from Rangoon by the time we reach Pahpoon. He will also then be able, while engaged himself on taking the section of the Beeling watershed, to send the surveyor round by Beeling, which route entirely avoids the watershed.

March 21. Halt.

Halted to take observations for latitude and longitude. Took observations of stars north and south for latitude, and six sets of east and west lunars for longitude.

March 22. Halt.

Halted to work out last night's observations.

March 23. Val-
ley of the Sal-
ween.

Left the Pah chong and descended the valley of the Salween by the right bank of the river. For the first two and a quarter miles there was a good path generally at an elevation of about 30 feet above the bank, and leading over slight undulations formed by the shoulders of spurs extending from the watershed; these spurs are very flat, and their sections at right angles to the path have a very gentle slope.

We then turned the south-east end of the range from which the spurs we had previously crossed descended. Here the hill rises directly from the edge of the river bank, but a road could without much difficulty be carried round it in side cutting. On passing this point, we came upon our encampment of the 15th instant at the mouth of the Padee chong—the distance from Pah chong to this being two and a half miles. We then continued our march down the Salween, hoping to meet the valley leading to our "east trace," but the Karens will give us no information regarding it. The guide we have with us is the same who led us on the 16th instant along the spur to the "east trace;" he insists that he knows of no valley leading up to the point we wish to reach.

There

There is no doubt he must know, and the police constable who has accompanied us from Kolodo insists that the man is lying. I can only suppose there is a burial ground somewhere in the valley, to discover which to strangers is considered a heinous crime by Karens.

We now proceeded independently of a guide. We could no longer find a path along the river bank, and though the ground continued good and even, yet as no trace had been cut, we were soon compelled to descend the bank of the river and walk along the sand bank below—we finally halted five miles from the Pah choung. The latter part of the journey was not quite so favourable as the first—occasionally a spur projects somewhat bluffly to the river bank, but only for a short distance, and never so steep as to render side cutting a very serious matter. There is no doubt that if a line should be brought *via* Kolodo, that it would descend to the Salween at the mouth of the Padee choung, and thence proceed northwards by the right bank of the Salween, to the Pah choung. It might, perhaps, then be necessary to ascend the Pah choung to the old track, but I do not think this probable. From the little information I could gather on the subject, I believe the bank of the Salween may be followed as far as the Kaimapyoo choung, and the fact of the bullock road tending towards the Salween as it approaches the Kaimapyoo favours such an opinion. We heartily wish we had permission to proceed to the Kaimapyoo this year. Beyond this stream, according to Captain Watson, all supposed difficulties vanish, and a good road exists right up the Mobyai valley through the Shan States.

The Karens report that it is impossible for elephants to descend to the Myintabyee by the bank of the Salween, so we have directed a raft to be made on which we may place one tent and a few days' stores, while the elephants return *via* Kolodo, and meet us at Myintabyee.

The raft was soon completed, but then a new difficulty arose, no one would undertake to navigate it. I urged that rafts had previously been taken down safely, but was informed that they were then in charge of skilled raftsmen. Hoping immediately to solve the difficulty, I offered 10 rupees to any man who would steer the raft to Myintabyee, supposed to be distant eight miles, but so far from my liberal offer being responded to, I was informed that one of the mahouts, who knew the river, would not take charge of the raft if I offered him 1,000 rupees.

During the day, the head constable, who has proved a most useful member of our party, started off with a few Karens to the watershed at the head of our "east trace," and followed the valley down. It proves to be the valley at the entrance of which our camp is pitched.

We intend to-morrow to explore it, while the head constable will proceed down the river bank and ascertain definitely whether or not elephants can go by the back of the Salween to Myintabyee.

Examined the valley leading to our "east trace," found it very unpromising at starting, being both tortuous and narrow. It soon became steep. In half a mile we ascended 170 feet, in the next quarter of a mile 180 feet, and at this point the ground became so broken and rough that, fearing the perambulator might be injured, as it is already much shaken, we stopped the survey, it being quite hopeless to make any use of the valley for our purposes. We walked one-third mile or so further, ascending in that distance about 280 feet. The watershed being then still distant about one mile, and as we should have had to ascend 900 feet more to reach it, we concluded that we should wisely save ourselves the exertion, and we returned to camp.

Our "east trace" must thus be deemed impracticable; this is disappointing, as the valley to the south was so favourable.

It only remains to examine the Myintabyee route, and ascertain whether that or the "west trace" presents fewer difficulties.

The head constable, on his return, reported the road to Myintabyee impassable for elephants and ponies for a distance of about half a mile, where the hill rises abruptly from the river bank. I therefore again urged on the Burmese and Karens the possibility of navigating the raft, and at last one of the Burman mahouts undertook its charge, and then two policemen and a Karen volunteered to accompany him; so to-morrow we send some of our baggage by the raft,

March 24. Halted camp. Examined the valley in continuation of the "east trace."

leaving the elephants to go round with the remainder, *via* Kolodo, and meet us at the mouth of the Myintabyee river.

March 25. Valley of Salween; marched distance, five miles.

We had some difficulty in starting, on account of back water. A start was at last made by getting coolies to tow the raft into the stream. We then continued our march along the bank.

The difficulties of the route proved to have been much exaggerated; certainly it would have been impossible for elephants to follow the path we took, which was generally half way down the bank; we attempted occasionally to get along above the bank, but were always driven back to the river, as there was no path of any kind, and the bambo jungle was difficult to get through. Had a trace been previously cut, the elephants might certainly have accompanied us.

We halted on the bank of the Salween, five miles from our last camp. Throughout to-day's journey the hills rise more directly from the river bank than we have observed before, thus rendering more extensive side cuttings necessary in this portion of the route.

The hills on the opposite bank of the river, which have hitherto appeared very steep and formidable, here dip down and almost disappear. Immediately opposite our camp are three small conical hills, about 300 feet in height, connected to each other by very low ridges, behind which appears a broad valley.

March 26. Valley of the Salween to Myintabyee river; distance, three and a half miles.

We tried the experiment this morning of descending to the Myintabyee on the raft it proved to be a great mistake; though the distance was only three miles and a quarter, we were four hours and a half on the raft, in consequence of the crew being so frightened of the Myintabyee rapids, that directly we were within sound of it they pulled to shore and warped the raft along through the back water.

There is nothing formidable in the rapid, and we would readily have shot it if our crew could have been persuaded to do so. It was well, however, we did not make the attempt, as we would have overshot the mouths of the Myintabyee river, which is immediately opposite the rapid.

The rapids which we have seen in descending the Salween from the Pah choung, and of which the Myintabyee is the principal, are mainly caused not by falls in the bed of the river, but by the sudden narrowing of the channel. At our last halting-place, the river is 300 yards in breadth from bank to bank, and the surface of the water at the present time 200 yards. There the river flows at about three miles an hour. Here, where the channel at the present water level is only about 60 yards broad, the river becomes a rapid.

The hills on both sides of the river, throughout to-day's march, are very low, but rise close to the river bank.

Our camp is most unpleasantly situated on a sandbank, the only level spot, about 50 feet above the river. The heat is excessive, and the wind brings no relief, it only blinds us with hot sand.

March 27. Halt.

We were compelled to halt to-day as our elephants have not yet made their appearance. They, however, arrived about noon.

There appears to be a broad valley bearing northwards between the hills immediately east of the Salween and the watershed of the Myneloongye river: this valley commences immediately opposite the Myintabyee; we have observed it at several points on our march down the Salween, through breaks or dips in the Salween watershed.

If this valley reaches to the bend of the Salween, at the mouth of the Kainapyoo choung, it might prove a good line; the Salween could be easily bridged at this point.

The line, however, would be within the Siamese Shan States, and thus complicate the preliminary arrangements for the construction of a railway.

March 28. Valley of the Myintabyee to Saudoolau; distance, six and a-half miles.

Left the Salween at 6.30 a.m., and ascended the valley of the Saudoolau to our old camp of 8th instant, distant a little over six miles and a half, and then continued half mile on the road towards Pinlayben, halting on the left bank of the Myintabyee, intending to-morrow to extend our survey further up the valley.

With the exception of about one mile and a half, where the valley was rather contracted, the route examined to-day was favourable for the construction of a railway,

railway, the general gradient of the valley being easy, and the valley itself, comparatively speaking, broad and open.

The first two miles were the best in this respect. We then left the bank of the river, and passed over a low flat spur of easy gradient, which would prove very convenient in assisting to regulate the elevation at which it might be desired a railway should approach the Salween, and which would probably be about 50 feet above the bank.

On descending to the river from this spur, the valley became more contracted; for about one mile and a half the river appeared to cut through the *axis* of the main ridge which rose up on either side directly from the bank of the river. Here the river was tortuous, and though at a higher elevation above its bank the ground was certainly better, still there would be a good deal of side cutting in this portion of the line; beyond this, the valley again opened out broad and level.

At five miles and three-quarters from Myintabyee, we came upon the junction of the Klaukloe choung leading to Pinlayben.

Explored up the Myintabyee one mile and a half, when we observed the junction of another stream from the south; this probably flows down the valley which we wish to examine. The guide led us on by the Myintabyee for another half mile, the direction of the valley tending north-west, which is so contrary a direction to that in which we wish to proceed, that I called him, and, after some conversation, discovered that the valley of the Myintabyee leads north-west until it reaches the Kolodo to Kyoukyee road. We therefore returned to camp, as we felt it would be useless surveying up the branch stream; probably it would be again joined by others in its course from the watershed, and we should be in doubt which line to follow. The best plan will be to encamp on the watershed and descend thence the valley we wish to examine.

March 29. Halt.

Started at 6.15 a.m. Went down the Myintabyee to its junction with the Klaukloe stream, and returned by the latter to the main road between Kolodo and Pinlayben, which we followed to Pinlayben; the road in this portion of the march being the same by which we proceeded to Kolodo on the 8th instant.

March 30. Saudoolau to Pinlayben; distance, four and three-quarters miles.

The portion of the Klaukloe valley which we examined this morning was favourable; the greater part of it is cultivated. It is probable, however, that the valley, though so good and the shortest to the Salween, would not be the best route to adopt, as it can hardly afford sufficient length of base for the descent from the watershed. To obtain an easy gradient, it will most likely be necessary to continue the line some distance up the Saudoolau river towards Kolodo, and then return down it and the Myintabyee to the Salween.

Mr. d'Avigdor came into camp this afternoon, he had just completed his sections of the Kolothau valley to the watershed, where he received a letter from me acquainting him of our arrival at Pinlayben.

Thunderstorm at 2 a.m., which has pleasantly reduced temperature.

Started at 6.15 a.m. up the Klaukloe valley to the watershed, by the trace cut by Mr. d'Avigdor, and of which he has taken the section. Until this is plotted, it is impossible to form an opinion as to the gradient that will be required to ascend the last portion of the valley.

March 31. Pinlayben to watershed; distance, two and three-quarters miles.

The difference of level between the watershed and Pinlayben is 1,028 feet, the distance being two miles and three-quarters. The valley offers opportunities for increasing the length of the ascent.

The appearance of the country presents a remarkable contrast to that we have been lately travelling through. The hills are covered with a thick stratum of rich mould; the vegetation is consequently exuberant, and the trees clothed with dense foliage, affording a deep shade even under a vertical sun.

We are encamped on the summit of the watershed, the lowest point we have yet discovered. We halt here to-morrow, in order to survey the ridge in search of another valley to the west.

Left camp at 6.45 a.m., to follow the ridge line of the watershed westward. It was hard work getting through the jungle, which was so dense that it was impossible to get any view, and we found it difficult to keep to the ridge line as we advanced. By 9.30 a.m., we reached the desired point, but found it to be 616 feet higher than our camp, and the valley to the northward not at all

April 1. Halt.

promising; instead of stretching away parallel to the Klaukloe as far as the Myintabyee stream, as shown in Dr. Brandis' map, it joins the Klaukloe valley south of Pinlayben.

The Myintabyee river west of the road to the Kolodo is incorrectly entered on that map. Its course is from the north west, and not from the south-west, as therein shown.

The highest point of the watershed which we passed over to-day is 3,490 feet above sea-level.

On returning to camp, found an unfortunate Karen mahout who had met with a severe accident; he was ascending the hill when his elephant slipped, fell down and threw him violently to the ground. His temple was deeply gashed, and he had other wounds. Captain Luard acted as surgeon, and with strips of sticking plaster, the only kind of plaster we have, drew together the edges of the wound, and bandaged the man's head in a most skilful manner. The elephant appeared to be much injured, and could not be induced to move from the place where he fell.

April 2. Watershed down the valley of the Klaukloe; distance, five and three quarters miles.

Left the watershed at 6.30 a.m., and descended the valley of the Kolothau choung. The actual valley line does not appear to be quite as good as that of the Klaukloe, but the valley is broader, and possesses greater facilities for improvement. The descent to the Yonzaleen is made in about six miles and a half. Allowing for a tunnel of one mile through the watershed, the ruling gradient for about six miles appears to be about 1 in 18. There is little doubt, however, that the base may be increased by making use of subsidiary valleys and pass here in the Yonzaleen valley.

Our camp is situated in the valley of the Klaukloe, about three-quarters of a mile above Menga Sakan.

This evening a mail arrived from Rangoon, and with it a pass from the King of Burma for our expedition to proceed through the Shan States to the Meikon, or Cambodia river: the Chief Commissioner of British Burma in transmitting the pass, also sent instructions to proceed beyond British territory, should the result of our survey within it encourage us to do so. Unfortunately it is now too late in the season for us to return, though had we received the permission when on the Pah choung, we would certainly have advanced at least as far as the Kaimapoo, if not beyond the Karennee frontier into the Shan States.

April 3. Halt.

Halted camp, and proceeded down the valley of the Yonzaleen to a point where the spur forming the eastern watershed of the Kolothau valley abuts on the left bank of the Yonzaleen, in order to ascertain to what extent the base of the ascent to the main watershed might be extended. We discovered a valley, that of the Maypoolaw stream, on the other side of this spur, of considerable breadth, and which appeared very favourable.

We ascended the valley first on its west side; for about a mile the ascent very gradual; we then crossed to the east side and continued ascending gradually for about a mile and a half further when the path became steeper, and brought us out eventually on a neck connecting the spur with the main range; this point is between 500 and 600 feet above the Yonzaleen, and the length of the ascent might be extended along the east side of the valley two or three miles or more beyond the point at which we commenced it.

The valley is flat, and the hill sides are favourable for the construction of a road.

On arriving at the highest point above noted, instead of the path into which we then struck descending at once to the valley, it would round the side of the hill, which had been cleared for cultivation, and exemplified with what comparative facility a road could be carried along the shoulders of these hills; and by so winding with moderate curves, a greatly increased length of base between any two points could be obtained.

There is no doubt that, starting from the main watershed by laying out a line with the theodolite set to the requisite angle, any moderate gradient consistent with economy might be obtained. But this would involve at least six weeks' field work to lay out approximately, and a full cold season to execute thoroughly. It is, therefore, hopeless for us to attempt it.

It is evident that at very moderate cost an excellent bullock road might be carried from the Yonzaleen over the watershed to the Myintabyee river. A sum of 400 rupees per mile would probably be sufficient to construct such a road, with no gradient

gradient in excess of 1 in 33. The same expenditure incurred on the banks of the Salween would give a level road from Myintabyee to the Pah-choung.

Another mail arrived from Rangoon, and with it a letter from the Superintendent of Police at Shwaygyeen communicating instructions from the Inspector General of Police, that our guard is not to be taken beyond British territory without especial sanction from the Chief Commissioner.

Had this letter and the Chief Commissioner's direction for us to extend our survey beyond British territory, which we received yesterday, arrived 10 days earlier when we were on the Pah choung, Captain Luard and I should have had no option but to proceed through Karennee without a guard; this probably would not have mattered, as we should carefully have avoided Eastern Karennee.

Returned to Takautha by the same route which we followed in our upward journey. Proceeding along the bank of the Yonzaleen we carefully noted the gorge of the valley which we had ascended yesterday.

April 4. Kolo-
than to Takautha;
distance, 12 miles,

The road crosses at a considerable inclination to the direction of the valley, making its breadth by the road three miles—the south side being about five miles distant from Menga Sakan. The distance of the watershed from this point is about 12 miles. Allowing for the increased length which would be obtained by winding the road round the shoulder of the hills, the distance to the watershed would practically be not less, I imagine, than 14 miles. This would afford a gradient of about 1 in 50, supposing a tunnel of a mile in length be taken through the ridge reducing the elevation to be obtained by about 260 feet.

The valley of the Maypoolaw has been entirely under cultivation, chiefly rice, but also tobacco and cotton. The hill sides are also being extensively cleared for cultivation, and judging from the rich nature of the soil, not only in the valley but on the hill sides, the crops should yield well.

Returned to Pahpool. From the general appearance of the right bank of the river, it is probable that a railway, after crossing the Beeling and Yonzaleen watershed, would follow that bank as far as the spur from which it is proposed above to commence the ascent to the Yonzaleen and Salween watershed. This would enable the gradients of descent from the Beeling and Yonzaleen watershed to be more easy than if the line descended at once to the Yonzaleen river in order to cross it.

April 5. Takau-
tha to Pahpool;
distance, eight
miles.

We received another mail from Rangoon, and were much disappointed to learn that the Assistant Surveyor, with the additional perambulator that I had applied for before leaving Pahpool, had not been sent. This will, I fear, hinder us from taking a complete section, as we proposed, between this and the Sittang.

Halted. The Tsaukay, whom I had desired to cut the trace to Thayet-thamine, arrived this evening, stating that the line was impracticable, and urged that a better line would be found to Shwaygyeen.

April 6. Halt.

In this opinion he was strongly supported by the police constable, our guide, and other Karens; it was also stated that this route was so superior to all others, that the Deputy Commissioner had lately caused it to be cleared. It is difficult to understand how any line bearing nearly due west can be a good one, unless there is some very convenient gap in the range. However, as there is sufficient time for us to hunt out different routes, and all the natives entirely agree regarding the proper route to be taken, we have decided to follow it.

Left Pahpool and encamped on the right bank of the river, at the ford two and a half miles above where we had crossed on the 27th February.

April 7. Pah-
pool up the Yon-
zaleen; distance,
two-and-a-half
miles.

We are very glad to turn our back on Pahpool; although the principal town in the Yonzaleen, we have experienced greater difficulties in obtaining supplies than at any other place on our journey. We could get literally nothing, not even a chicken, though we saw plenty, and offered to pay whatever the people liked to ask. The Myo-oke either could not or would not assist us in the least. He certainly sent us a present of a piece of pork, an attention on his part which, though doubtless well meant, was not, I fear, properly appreciated, the Karen pig being, if possible, a more filthy feeder than the pig of any other country.

The whole time we have been in the Pahpool districts, we have met with no

assistance whatever from the native officials; had it not been for the great contrast in this respect afforded by Ko-shway-doh, the police inspector of Kolodo and the head constable, we should have been unable to obtain any supplies or assistance whatever; when difficulty occurred in getting coolies, Ko-shway-doh's men readily volunteered to assist in cutting the trace and otherwise affording us help. But this has only been the case with the policemen under the immediate orders of the inspector. The men who first accompanied us from Sittang had received instructions that they were to do nothing beyond their *bond fide* police duties, and they certainly obeyed the order to the letter.

April 8. Yonzaleen to Kyunben Sakan; distance, six-and-three-quarters miles.

No coolies arrived this morning, which is very unfortunate, as we required them to clear a trace over the watershed. We ascended to the same point on the watershed that we examined on the 27th February, taking the section as we went.

The path ascended the hill some feet higher than the lowest point of the watershed, which is 605 feet above sea, and 255 feet above the Yonzaleen, we then descended to the valley of the Mana-noay, 155 feet in a distance of about a quarter of a mile. We then ascended a long isolated hill, with a valley on either side; after continuing along the ridge of the hill for some distance, we again descended to the Mana-noay valley.

There would be no difficulty in overcoming this watershed by a deep cutting through the neck and gradients on either side.

The valley of the Mana-noay is very fairly broad and level, but, after following its course for a short distance, the path ascended the side of the hill to the west, and then crossed over a series of broad flat spurs the whole distance to Kyunben Sakan,

This valley would doubtless be easier for a railway than even the route we followed.

During the afternoon I endeavoured to patch up the perambulator which had been brought into camp in pieces. The brass arm containing the shaft, and consequently the shaft, had fallen off.

April 9. Kyunben to Nullah Sakan; distance, five-and-three-quarters miles.

Started at 6.30 a.m., by the road toward Pahwatta. At a distance of about a quarter of a mile from the Sakan the Shoa-gheen road diverges. This we followed, leaving Mr. d'Avigdor to return by our old route to Kyketo.

The path was very well cleared, it led directly across the Mana-noay valley, and was very level for a distance of two miles, when we commenced the ascent of the Mana-noay and Beeling watershed. From this point to our present camp, three miles and three quarters, it crossed over a series of spurs, and is, without exception, the most impracticable and worst road I have ever seen. I cannot conceive the object of such a road since the valley of the Mana-noay offers a more favourable line the whole way to the Beeling river. By our present route we have reached an altitude of upwards of 800 feet above the valley, and we have ascended and descended others varying from 600 to 800 above the plain. I much question whether it has the advantage of being shorter than the valley route on account of the numerous bends and curves which exist throughout the last three miles; but even so, it would not compensate for such a singularly bad road.

We are encamped at a small sakan, five miles and three-quarters from Kyunben Sakan. It is useless following this wretched road any further; when we reach the Beeling river we must descend it to the mouth of the Mana-noay river, in order to place beyond doubt whether, as I imagine, its valley can be made use of. We must then proceed up the Maywine valley towards Shoa-gheen, or the Maypan valley, toward Thayet-thamine, as circumstances may lead us to decide.

The only consoling circumstances of to-day's march is, that in spite of the badness of the road, the repairs yesterday made to the perambulator have proved so far successful.

April 10. Nullah Sakan to Beeling valley; distance, five-and-a-quarter miles.

Started at 6.30 a.m. Commenced ascending at once to a maximum height of 1,298 feet above sea level. From this point to the Beeling valley the descent was comparatively regular, but steep.

On arriving at the valley, we at once left the path and descended the river. We walked along the shingle a distance of about one mile, where we secured some small rafts constructed of bamboos. Captain Luard and I got on one, navigating

navigating it ourselves; it had just sufficient buoyancy to keep us from being more than ankle deep in water.

We met with very good specimens of white marble; it crops out of the bed of the river, the dip of its strata being nearly vertical. Distant thunder and slight rain during the afternoon.

Slight rain in the early morning. Proceeded down the river four miles and a half to the Mananoay valley, which we ascended about one mile and a half. It is as I expected, broad, and is fairly level.

On returning to the Beeling river we descended a further distance of two miles, and encamped on the left bank of the river.

Slight thunder, accompanied by heavy rain, which lasted from 12.30 p.m. to 9 p.m.

Descended the river a further distance of two miles, then struck off eastward ascending a small hill, immediately on the right bank, which at the points we crossed was 100 feet above the valley.

After descending the hill the path led across very even and level ground, through bamboo and teak forest to Pallo's village, on the Maywine stream. This village is distant about four miles and three-quarters from the Beeling river by the route we have come.

Our route to-day passed over a very good line of country.

Our camp is distant from Pallo's village six miles and three-quarters, and is on the left bank of the Maywine.

For the first mile from Pallo's village the path followed the left bank of the stream over slightly undulating laterite; it then crossed the river, and continued over similar ground for another mile, when we crossed over a low spur which projects from the watershed nearly if not quite to the bank of the stream.

The height of the spur was only 165 feet above the valley, and the gradient on either side by no means steep. The spur might, however, be entirely avoided.

The perambulator has again given trouble; it is now wedged, nailed, and tied up at all points.

We proceeded this morning by a very good route as far as the May-play stream, distant two miles and three quarters. Here we left the path which leads up the May-play valley, and endeavoured to follow the course of the May-wine.

We ascended the above about one mile, where we found it impossible for the ponies and elephants to proceed further. Captain Luard's pony fell in crossing over a slippery slab of granite, and became so frightened that it was with difficulty he could be induced to move.

The route led up the bed of the Maywine, and was a gradual ascent as far as we went, but the difficulty for animals consisted in the large slabs of rock on which they could get no foothold.

The May-wine at this point passes through a dip of a spur which forms the western watershed of the lower part of the valley. The hill on either side of the gap is not high, probably about 300 feet above the valley.

Where the river crosses through it the hill rises up from the edge of each bank: the Karens assert that this continues for a distance of about one mile and a half, throughout which, of course, side cuttings would be necessary in constructing a road.

The only course for us now to adopt is to ascend the May-play valley by the usual path, and so get into the May-wine valley again, beyond the difficult portion of the course; we shall then be better able to judge whether any practical use can be made of it.

Having given up the attempt to ascend the valley from this side, we returned and encamped near its mouth.

Ascended the valley of the Mayplay about two miles and a half, where we joined the direct road from Pahpoo to Shoayghen from which we had diverged on the 10th instant.

We then crossed the stream and commenced the ascent of the watershed, gradually at first, but soon it became very steep, and we finally reached the summit at an elevation of 1,784 feet above the sea, and 1,100 feet above the point where we crossed the Mayplay.

We descended on the west side to Teebaulau stream, where we encamped five miles

April 11. Descended Beeling valley; six-and-a-half miles.

April 12. Beeling valley to Pallo's village; distance, five-and-a-quarter miles.

April 13. Pallo's village up to Maywine valley; distance, six and three-quarters miles.

April 14. Maywine valley to the Mayplay; distance, two and three-quarters miles.

April 15. Mayplay stream to Teebaulau; distance, five and a-half miles.

miles and a half distant from our last camp, and at an elevation of 1,598 feet above the sea.

April 16. Tee-
baulau to Nyoung-
ben Sakan: dis-
tance five miles.

Moved camp to Nyoungben Sakan, distance five miles. At starting we descended for a short distance the Teebaulau stream, and then crossed over some spurs to the Menoo stream, distant about two miles.

We then crossed the spur between the Menoo and Maywine stream. The valley of the latter here is nearly as broad and as promising in its appearance as below the junction of the May-play.

We are distant from that point by the valley about four miles.

April 17. Halt.

Halted the camp. Proceeded down the Maywine. The first half mile was very good; the path then led down the bed of the stream to avoid a small hill which abutted on the left bank, and for half a mile was very rough and unpleasant, and quite impassable for ponies, though the two elephants we took with us to assist in clearing the trace were able to follow.

At the end of the first mile the Tsaukay informed me that we had passed all the difficult part between the May-wine and Menoo streams.

Provided the watershed which we have to cross to-morrow does not prove more difficult than that *via* Kyketo, this will certainly be the preferable line, since the whole difficulty from the Beeling river to this point is contained in a mile and a half of side cutting between the May-play and Menoo streams and the half mile near Nyoungben Sakan.

April 18. My-
oungben Sakan to
Jaiboo Sakan;
distance, seven
and three quar-
ters miles.

The first mile and a half from Nyoungben Sakan was very good; the ascent toward the watershed gradual. The path then followed the bed of the Wek-choung stream for some distance still gradually, though the gradient would require to be modified considerably to obtain a preferable line. A short distance from the axis of the range the path became much steeper, and finally the watershed was reached after a sudden and very steep ascent.

The height at this point is 1,756 feet above sea; 951 feet above the May-wine valley.

The descent to the May-play stream is much better, but it would be impossible to obtain easy gradients on either side of the range without introducing a tunnel of probably a mile in length. On reaching the May-play the route down the valley to our camp, Yaiboo Sakan, was very good.

April 19. Jaiboo
Sakan to Toun-
thalay Seik; dis-
tance, eight and
a-quarter miles.

Followed the May-play valley to Toungh-tha-lay Seik, distance eight and a quarter miles.

The road good and the gradient of the valley easy.

At about three miles from Yaiboo Sakan the valley narrowed, and the road crossed over a series of broad low shoulders for about a mile. These did not exceed in height more than 60 to 70 feet.

We then passed through extensive areas of betel plantations and large *toungyu* clearings.

In the evening we left Tounk-thay-lay Seik, on rafts, for Shoaygheen, leaving Mr. Simon to follow by the road.

April 20. Toungh-
tha-lay Seik to Sho-
aygheen; distance, 16½
miles.

Arrived at Shoaygheen at noon. We observed some Karens washing for gold in the May-play and Mootama stream.

April 21. Halt.

Halt.

April 22.

Halt. Paid off and discharged seven elephants which I engaged at Pah-poon.

Sent Mr. Simon by boat to Sittang, that he may hasten on to Kyketo to join and assist Mr. d'Avigdor.

We left Shoaygheen ourselves at 10 p.m. in small boats, having previously sent our elephants to Sittang to meet us.

April 23. Sittang.

Arrived at Sittang.

April 24.

Halted to take sections of the Sittang river.

April 25.

Halt.

April 26. Kyketo.

Proceeded to Kyketo by the direct road, avoiding Kyketha.

April 27. Beeling.

Arrived at Beeling, having travelled all night in bullock carts. Here we met with

with Mr. d'Avigdor. Paid up and discharged our elephants. Sent our ponies and heavy baggage to Rangoon by Sittang.

We proceeded last night in carts to Kauksareit, arriving there early this morning; after considerable delay and trouble succeeded in getting three small boats, and descended the Kauksareit stream to Dunnoo. April 28. Beeling to Dunnoo.

Pushing on night and day, with relays of boatmen, reached Martaban at 9 p.m. April 29. Dunnoo to Martaban.

Crossed the river at daylight to Maulmain; placed our baggage on board the steamer "Ava," and left for Rangoon at 11 a.m. April 30.

Arrived at Rangoon.

May 1.

*J. M. Williams, Captain,
Superintendent, China Route Survey.*

JOURNAL of the ROUTE between *Kyunben Sakan*, and *Kyketo*! (9th to 21st April 1867.) By E. H. d'Avigdor.

Half-a-mile from Kyunben Sakan, I left the main party and marched towards Pahwatta. Crossed a succession of small spurs, but did not take the heights of all, as it was evident that by keeping a little to the west or right, the road could be laid out quite level. I reached a good camping place, on the Nateolaw choung, distance 10 miles, and halted there. April 9. Kyunben Sakan to Nateolaw Choung.

Tested the aneroid by the mountain barometer, and found the variations of the two perfectly symmetrical.

Started early this morning, and crossed the neck of a spur which we noticed on the upward journey, and which I then took for the main watershed. It turned out to be the lowest point of a ridge separating the valley of the Nateolaw choung from that of the next stream which runs into the Beeling, and of which I could not ascertain the name. It is 150 feet above the general level of the valley. April 10. Nateolaw Choung to Pannaw Choung.

It is an awkward place, as the spur runs some distance to the north north-west, and rises rapidly in both directions from the road, which evidently crosses it at the most convenient place. I spent some time in examining this spur, and pitched my tent on the Pannaw choung, half a mile beyond the point where the direct road to Lagonbyoo diverges from that to Pahwatta. Another neck is crossed just before reaching this spot; it separates the above-mentioned valley from that of the Pannaw choung, and could not be avoided.

Arrived at Lagonbyoo at 10 a.m. There is no very formidable obstacle to overcome on this portion of the route, but about a mile from the Pannaw choung the path crosses a spur, the same which butts so steeply on the river between Pahwatta and Lagonbyoo, at its very lowest point, and this is 140 feet above the stream. Further on again, just before reaching the point where the road from Wingalay to Pahwatta branches off, it climbs up along the bottom of a gorge, an ascent which could only be avoided by deep cutting. April 11. Pannaw Choung to Lagonbyoo.

To resume the observations of the last three days' march; there is no obstacle of any real magnitude between Lagonbyoo and Kyunben Sakan, but there is an accumulation of minor difficulties which I think suffices to condemn the line if the one up the Beeling, on its right bank, is at all feasible. There are four spurs of some height, which must either be crossed or cut through; there would be a certain amount of side cutting, and in no case could the line be laid out with an easier maximum gradient than 1 in 90. Probably 1 in 66 could be necessary in order to save an immoderate outlay in earthwork.

From inquiries made here, and from the view of the opposite bank obtained from a hill above the camp, there is no doubt that there would be ample room to lay a level line along it northwards with little or no side cutting. I should have crossed the river here and cut a trace if time had allowed; but as my directions from Captain Williams were, to devote most time and attention to

the watershed between the Beeling and Sittang, and as there seemed to be no doubt that the line was perfectly easy, I determined to proceed.

April 12. Lagonbyoo to Wingalay.

Thermometer only 64° this morning. The hills between Lagonbyoo and the ford of the Beeling are not at all high; and they slope so easily into the river that I was able to decide at once that a perfectly level line could be carried round them with but little side cutting. From the ford to Wingalay, the road is a dead level, and there is no difficulty whatever.

Saturday, April 13. Halt.

Halted. The classics, who had all suffered more or less from fever, required rest, and their condition was much improved thereby. I made inquiries as to a good route from here to Kyketo *via* the Thaybyoo chong, and was informed that a perfectly level one existed, which would be pointed out to me after I had reached Natkyee seik. I doubt the correctness of this information.

April 14. Wingalay to Natkyee, nine miles.

On this day's march, the line is all but a dead level parallel to the Beeling river, and, as I anticipated, the aneroid showed no perceptible difference, except at one point where the path crosses the neck of a spur which can easily be avoided without side cutting, by following the bank of the river instead of leaving it.

At Natkyee found a capital zayat a little off the road which we had not noticed on our upward march; the people informed me unanimously that there is a bullock track from here to Kyketo without any hills at all. I engaged a guide to show me this wonderful route, in which I only half believe.

As to the line by the Thaybyoo chong, it is clear that the easy valley marked on the maps, which has or ought to have its embouchure opposite Mangoe garden, has no existence. There is an uninterrupted line of hills on that side of the Beeling.

April 15. Halt.

I was compelled to halt to-day in consequence of indisposition, probably arising from exposure to the sun and over-doses of quinine.

April 16. Natkyee to Yéoun, 11 miles.

The first portion of to-day's march was on the old Pincha chong route. The new one then led into the left, and to my great disappointment soon returned to the Beeling river again, from which it afterwards never diverged much. My march was slow in consequence of having to survey. If I had known that the road would follow the Beeling river, I think I should not have taken it.

At seven miles from Natkyee passed the village of Sandaw, which is not marked on the maps at all; and at 1 p.m. reached the important and populous village of Yéoun, which is marked on the maps as Yénon. Hence I did not identify it when the name was mentioned to me by the Burmese guide.

April 17. Yéoun. Halt.

Halted to-day to investigate the road to Kyketo from this side. I found I had under-estimated the size of the village, which is by far the largest and busiest which we have seen on the whole march.

Numbers of cart roads run from it in a southerly and westerly direction. I followed one for three miles over country which is just sufficiently undulating not to be a level plain, but without any eminence high enough to afford any view or to produce any effect on the aneroid. At three miles the road divides. I was told that the left-hand one led to Beeling, and that on the right to Kyketo. The latter seems to turn the watershed without ascending any important eminence. I fear it will be too long for our purpose, yet it is evident from observations and testimony, that there is no good path or track across the hill between this and the Pincha chong.

April 18. Yéoun to Kyketo, 22 miles.

Surveyed back into Yéoun. Having reached the point from which I surveyed yesterday, I pushed on with a Burman guide, and left Ahfoke to bring up the survey. The barometer showed but little variation from this point to the Thaybyoo-chong. I crossed a low neck which seems to connect or prolong the main watershed to the steep hills on the south near Beeling, also several spurs; but all are less than 100 feet high, though some of them are very steep, and it struck me at once that it would be better to skirt than to cut through them. At Thaybyoo-chong, where there is a considerable Burmese village, I awaited several hours for the elephants; as they did not arrive, and the Burman guide assured me there were several tracks close together, any one of which they might have taken, I pushed on to Kyketo, nine miles off, hoping to find them there. I was, however, disappointed; they had not been heard of.

A note reached me from Ahfoke early this morning, by which I concluded that he had taken another route; I accompanied the bearers of it back to meet him, and fell in with him on the Thaybyoo chong, which he had crossed more to the south.

April 19. Kyketo.

His route was much better than the one I took, as it was really practically quite level; and though it was very circuitous, the bends are so small, and so unnecessary, that it could certainly be very much straightened if a road were laid down.

April 20. Thaybyoo Chong.

To-day I worked in the piece of road between the Thaybyoo-chong and the point five miles from Yéoun, where Ahfoke diverged from the track I had taken, and having no tent or stores with me returned to Thaybyoo-chong in the evening.

Finished the survey of the line to Kyketo.

April 21. Thaybyoo Chong back to Kyketo.

Four of my mahouts being laid up with fever, I started with only two elephants to re-examine the northern or Pincha chong, and, if possible, to find a better one; our old Burman guide assured me there was one close to our former track. Encamped on the Thaybyoo chong, about a mile below Kuay-thay chong, and filled in the remaining portion of the survey.

April 22. Kyketo to Thaybyoo Chong.

The guide led me to-day by a very straight track, across a succession of spurs, to our old camping place of Thekeygyen. I surveyed this route, but, of course, it would never be adopted for a tramway, as the Thaybyoo chong, which is almost parallel to it, offers a level valley line all the way. This track, however, cuts three miles off the distance from Kyketo.

April 23. Thaybyoo Chong to Thekeygyen.

Started early this morning with guides and Karens for cutting the jungle, to investigate the very straight and good route to Natkyee, I had heard so much of lately. When I had crossed the spurs between the camp and the Kabaw chong, and came to the point where the old route begins to ascend the real watershed, the guides sat down and said they had made a mistake, and there was no other but the old Pincha chong route. I was much disgusted, but as I had always doubted the existence of another easier path, I determined to try and improve the old route, instead of wasting time in a vain search for a new one. I, therefore, worked down the Kabaw chong, to its junction with the Thaybyoo chong. This route is circuitous, but it would give a level line with little or no side cutting from Kyketo to the foot of the watershed, which would then be overcome by one ascent or tunnel.

April 24. Thekeygyen.

I sent the elephants back to Kyketo this morning, and started with the least possible quantity of baggage. I took the section of the watershed with the aneroid, and arrived at the junction of routes, near Natkyee, at about noon; having spent some time in following the bends of the Pincha chong. I discovered that there is no point on the ridge, at least within several miles, lower than the one by which the road crosses; the height would, therefore, have to be reduced by tunnel or cutting, but there is ample room for a base on both sides.

April 25. Thekeygyen to Sandaw.

Encamped in a hut in Sandaw village, 11 miles.

Ahfoke and one of my classies being again down with fever, I obtained a boat and floated down the Beeling river. Occasionally I landed to examine the right bank, which is perfectly level all the way, offering every facility for the construction of a road. Near Beeling itself the high hills alluded to above approach the river, but there is still more than sufficient space between their foot and the banks for all works which would be required.

April 26. Sandaw to Beeling, 14 miles.

I intended to start to-day for Kyketo, but the arrival of Captains Williams and Luard, who had already examined that route, terminated my work.

April 27.

Elim H. d'Avigdor, B.A.,
Civil Engineer.

Captain *C. E. Watson* to Major *H. Nelson Davies*, Secretary to the Chief Commissioner, British Burmah, Rangoon; dated Kyouk-Phyoo, 10 June 1867.

Sir,

IN reply to your letter (No. 649) dated 30th ultimo, calling upon me to report regarding the difficulties that would probably be met with by Captain Williams' survey party after they have crossed the British frontier, I have the honour to state that if the party attempt to pass through any portion of Eastern Karennee they will most assuredly be stopped. The late Mr. O'Riley failed to obtain permission even to visit the Eastern Chief, though he was provided with letters and presents from our Government. It is therefore highly improbable that officers of less experience, accompanied by a large armed party, will be allowed to set foot in Eastern Karennee. The distance between the Pah and Kaima-phyoo choungs, is 35 miles. The territory is said to belong to the Western Chief, but I believe that the Eastern Chief has an equally good claim to it; however, as far as the Kaima-phyoo, at its junction with the Salween, I do not anticipate that any opposition will be made. From the Kaima-phyoo, a north westerly direction should be taken, so as to reach Kyek-phogee's territory, as soon as possible. A narrow strip of eastern territory will have to be crossed. Near this the Chief Pokai (whose village was destroyed and relatives killed by the Toungoo police) resides. It is possible that an attempt might be made to stop the party at this point, but I do not think that they would dare to use force.

2. The boundaries between Eastern and Western Karennee are so arbitrary that it is impossible clearly to define them. The Chief Pokai has taken his position so as to command the great bullock road leading from the southern Shan States and Karennee to the Yoonzaleen, and it is probable that by this time he lays claim to a portion of the 53 miles of almost uninhabited territory between the Kaima-phyoo and Kyek-phogee's.

3. The Chief of Western Karennee, will, I am certain, render every assistance in his power, but after leaving his village it will be necessary for the party to pass through the large town of Nugay-doung, distance 18 miles and near the borders of the Shan States.

4. There is a semi-independent chief here. Though he is nominally tributary to Eastern Karennee, he appears to be little interfered with and his district is the resort of all the turbulent characters from the Shan States and Karennee. Sixteen miles further on, and the Shan town of Mobyai is reached. Here all difficulties cease. Though the Chief Commissioner has not expressed a wish to receive my opinion on the various practical routes, still as I think that it may be of some future use, I will add something on the subject.

5. 1st.—Route from Shoay-gheen to Toungoo, thence to Nengyan, Yemaithin and Hlinedek. There is an excellent cart road the whole way from Toungoo, distances as follows:—Toungoo to Nengyan 65 miles, Nengyan to Yemaithin 50 miles, Yemaithin to Hlinedek 30 miles, thence about 35 miles to the high lands of the Shan States, including, I should say, about 15 miles of really difficult road. Nine miles further on, and the large town of Pwayhla is reached. From this town a gradual descent might be taken to the village of Mobyai at the Great Lake, otherwise the road might be carried along the gently undulating hills, to Laigyah, formerly a city of great importance. From Laigyah to Theinne (north latitude 23°), I do not think that any great engineering difficulties would be encountered.

6. The disadvantages of this route are:—

1st. That a great length lies in Burman territory.

2nd. That in several parts of the road, the water lies some feet deep during the rains. (A line might perhaps be taken nearer the range of hills that run nearly north and south of latitude 22°.)

7. The distance from Shoay-gheen to the Great Lake, is by this route, 300 miles. By the Karennee route 275 miles. There are two other roads branching off from Yemaithin to the Shan States, distances by each of these nearly 280 miles

miles to the lake. As both of these roads are greatly inferior to the Hlinedek one, I do not give particulars regarding them.

8. The advantages of the Karennee route are :—

1st. That no portion will lie in Burmah territory.

2nd. That there will be fewer large streams to cross.

9. The disadvantages are :—

1st. That for 173 miles not more than six small villages will be passed, and the whole of the surrounding country is very thinly populated. Between Kyek-phogee village and the lake, 102 miles, the population is dense. On the other road, with the exception of about 50 miles, the surrounding country is very thickly populated along the entire length.

2nd. The stupendous hills between the Yoonzaleen and Kaima-phyoo rivers.

10. I would strongly urge that no attempt be made to proceed up the valley of the Salween, from the Kaima-phyoo, for the following reasons :—

1st. Because Eastern Karennee owns both banks to the Shan frontier.

2nd. That between the Shan frontier and Monai district live a semi-independent race. These people, assisted by the Eastern Karennees, attacked Monai in 1865.

3rd. Between Monai and Theinnee reside wild tribes called Kakhyens and Lawas on the lofty mountains on either side of the Salween. The Shans are much afraid of these savages. On the other hand, should the party proceed along the valley of the Mobyai, not only will they penetrate a densely-populated country, but they will receive every civility and assistance from the inhabitants as far as Laigyah. Beyond that ancient city to the Chinese frontier, the people are more independent, so that it is far better to treat with the chiefs direct, than to attempt to claim a right of way by means of a royal pass.

11. I furthermore beg to suggest that the survey party be provided with a pass from the King of Burmah, and that in the pass be entered, as accurately as can be estimated, the number of officers, the number of armed men, and the number of followers, with such carriage, consisting of elephants, bullocks and coolies, as may be required. Without specifying the number, over officious head-men are apt to find fault, and may attempt to delay the party on account of their numbers not tallying with those entered in the pass.

12. Another thing I would strongly advise, is, that no Nahkan, or other official from Mandalay, be allowed to accompany the party. Such a man is certain to be provided with private letters of instructions, as to the route to be pursued by the party, &c., and should they attempt to take their own way, every obstacle will, in an underhand manner, be thrown in their way ; besides, he will effectually prevent the collection of any information regarding the resources of the country, &c., to say nothing of the amount of money that he would take from the chiefs by way of expenses for the party, which said expenses would eventually find their way into his own pocket.

13. Trusting that the information contained in my letter may prove of some use in directing the movements of the survey party,

I have, &c.

(signed) *C. E. Watson,*

Officiating Deputy Commissioner, 4th Class,
Ramree District.

(Government of India.—Public Works Department.—No. 599 C.)

From Colonel *C. H. Dickens*, Secretary to the Government of India, to the Chief Commissioner, British Burmah.

Sir,

Simla, 15 August 1867.

I AM directed to acknowledge the receipt of your letter, No. 355-4 C/C, dated 25th June last, submitting the joint report of Captains Williams and Luard on the operations of the China route survey during the season of 1867, and to request that the satisfaction of the Governor General in Council may be conveyed to these officers at the manner in which the duties entrusted to them were conducted.

2. I am, moreover, to request that the necessary arrangements may be made, subject to such further instructions as may be received from the Foreign Department, to prosecute the inquiry at the earliest safe period next season. The Governor General in Council hopes with reference to the 44th paragraph of the report, that it will be found possible to complete the investigation in one season without fail. Every precaution should be taken to secure, as far as possible, this result.

3. Lithographed copies of the map and sections will be supplied hereafter.

I have, &c.
(signed) *C. H. Dickens*.

(Government of India.—Public Works Department.—No. 600 C.)
Simla, 15 August 1867.

ROAD TO CONNECT BURMAH WITH CHINA.

READ the following Papers :

Letter from Chief Commissioner of British Burmah, No. 355-4 C/C, dated 25th June 1867, and Enclosures.

Despatch to Secretary of State, No. 133, dated 15th August 1867.

Public Works Department Letter, No. 599 C, dated 15th August 1867, to the Chief Commissioner, British Burmah.

It is not deemed necessary in this Department to issue any further instructions, as the local officers are fully alive to all the necessities of the matter as an engineering inquiry.

ORDER.

Ordered, that copies of these papers be forwarded to the Foreign Department for information, in continuation of Public Works Department, No. 435 C, of 11th June 1867, with a request that any necessary instructions as to communication with the local native authorities may be issued, copies being sent to this Department.

(signed) *C. H. Dickens*, Colonel, R.A.,
Secretary to the Government of India.

COPY of TELEGRAM from Secretary of State to Governor General, sent on 15th October.

“You are authorised to stop further action in the matter of the Burmo-Chinese survey. An answer will be sent to your Despatch of the 15th August.”

(Public Works, No. 111.)

The Secretary of State for India to the Governor General of India in Council.

Sir,

India Office, 31 October 1867.

1. To your Excellency's telegram, requesting that instructions might be telegraphed to you "as to continuing the survey from British Burmah to the Chinese frontier," I replied by telegram, on the 15th instant, that you were "authorised to stop further action in the matter." I now proceed to reply to the despatch on the same subject, No. 133, of 15th August last, previously received from you.

2. In his despatch of the 7th of February in the present year, my predecessor, while expressing his wish that the survey should be proceeded with, added, that he must most carefully guard himself against even appearing to undertake that, if a decision should ultimately be arrived at in favour of the construction of such a road or railway, the necessary capital will be either furnished or guaranteed by the revenues of India. Lord Cranborne further stated that it was not his wish that your Excellency should take any step which should, in your judgment, incur any grave risk of political embarrassment.

3. Looking to the pressing and urgent demands which are now made upon the revenues of India for the development of the resources of the country, and to the inexpediency of straining Indian credit by any excessive extension of the system of guarantees, I am decidedly of opinion that it would at present be out of the question to render pecuniary aid for the promotion of this enterprise, however favourably it might be reported on; while I see no reason to suppose that the public, which is unwilling to undertake the construction of railways in Hindostan itself without the security of a Government guarantee, would be disposed to do so in Burmah. On the other hand, you express some anxiety lest the prosecution of the enterprise should lead to a collision with Burmah, a contingency obviously contemplated by Lord Cranborne when he adverted to the possible risk of political embarrassment, and you therefore deprecate any further expenditure of money or labour upon the survey. I attach great weight to your opinion on this point, and I am fully alive to the inconvenience which might arise from any complications with Burmah, especially in the present state of the affairs of that kingdom.

4. I am therefore brought, though not without reluctance, to the conclusion that it will be the most prudent course to suspend the operations of the survey for the present. Should a more favourable juncture present itself hereafter, they may be renewed; and what has already been done will be found to be of value in any future operations.

I have, &c.

(signed) *Stafford H. Northcote.*

(Foreign Department.—Political.—No. 138.)

The Governor General of India in Council to the Secretary of State for India;
dated Simla, the 26th August 1867.

Sir,

WITH reference to the correspondence forwarded under cover of the Despatch from the Government of India, No. 4, dated 19th January 1863, forming Nos. 3 and 4 of the Abstract of Contents, we have the honour to transmit, for the information of Her Majesty's Government, the enclosed copy of a communication from the Chief Commissioner of British Burmah, proposing the dispatch of an expedition to explore the caravan route between Ava and the Western frontier of China, *via* Bhamo.

2. We have negatived Colonel Fytche's proposal for the reasons stated in our reply, a copy of which also accompanies this Despatch.

We have, &c.
 (signed) *John Lawrence.*
W. N. Mansfield.
H. S. Maine.
G. N. Taylor.
W. N. Massey.
H. M. Durand.
G. U. Yule.

BHAMO ROUTE.

From Colonel *Albert Fytche*, Chief Commissioner, British Burmah, and Agent to His Excellency the Viceroy and Governor General of India, to the Secretary to the Government of India, Foreign Department, with the Governor General (No. 127 P.—54 P.S.); dated Rangoon, the 21st June 1867.

REFERRING to letter, No. 462, of the 12th May 1862, from the Secretary to the Government of India, Foreign Department, to the address of the Chief Commissioner, British Burmah, I have the honour to state that I find in the fourth paragraph the points to which the attention of the Chief Commissioner was directed on the occasion of his projected visit in that year to Mandalay for the purpose of negotiating a treaty with the King of Burmah: and to observe that the second, third, and fourth points therein enumerated have reference to the re-opening of the caravan route from Western China by the town of Bhamo, and the obtaining facilities for the residence of British merchants at that town, as well as their free passage by that route to Yunan, and to the free passage of Chinese from Yunan to British territory, including Assam.

2. Certain of these objects were attained by the treaty of November 1862. Thus by Article 7, British merchants were allowed to settle, and have lands for the erection of houses of business in any part of the Burmese territory; and by Article 9 people, from whatever country or nation, who may wish to proceed to the British territory, the Burmese Ruler shall allow to pass without hindrance.

3. But the re-opening of the caravan route from Ava, *via* Bhamo, to Yunan by a joint British and Burmese mission to the frontier, which was indicated in the second point of the fourth paragraph of the above letter, has not yet been accomplished; neither has it been possible for merchants or their agents to proceed by that route to China.

4. Should the Government decide that I should proceed to Mandalay for the purpose of negotiating a fresh treaty with the Court of Ava, it may be worthy of consideration whether I should not be authorised to obtain, if possible, permission for an exploring party to attempt the passage of the above route.

5. If it be found feasible to conclude a treaty with the King, as contained in the draft submitted to the Court by Colonel Phayre last year, then by Article 5 the British Government will be entitled to place a British officer at Bhamo, as a station at which taxes are collected; and I think it would be well to endeavour to gain the assent of the King to the resuscitation of the nearly extinct trade by that route.

6. This trade, although it has now almost ceased, amounted, as late as the year 1855, to nearly half a million of pounds sterling, and is fully described at pages 147, 148, and 149 of Yule's "Embassy to Ava." The route has the unusual advantage of having been used for centuries as a line of traffic; and that it should have retained its vitality so long, among all the disturbing influences of the flow and ebb of the Chinese and Burmese power, is a conclusive proof of the urgent necessity for the interchange of commodities between the respective countries; and is also a strong indication that somehow or other the line possesses some practical advantages over other through routes.

7. However,

7. However, I may remark that I do not desire that the exploration and re-opening of the Bhamo route should be understood as intending to interfere with, or affect in any way, the prosecution of the present survey for a line of railway from Rangoon to China by the best practicable route. The views of those who support the latter measure are to avoid the long valley line from Rangoon to Mandalay or Bhamo, and to seek a directer line further to the eastward. The Government have already surveyed one line of country from Rangoon to our north-eastern frontier, and it is in every way desirable that the survey be prosecuted until the Chinese frontier be reached.

8. But the present proposition regarding the Bhamo route can in no way affect the direct railway question. The immediate object of the party, if one be sent, viâ Bhamo to China, would be to find out the different interests of the Khakyens, the Shan Chiefs, and the nearest authorities in Yunan, which has caused the cessation of trade, and to see what measures could be adopted to reconcile these interests. The re-establishment of trade would manifestly be a gain to all parties, and a neutral authority would be best able to remove the obstacles which at present exist.

9. Could the route be re-opened simultaneously with the appointment of a British official at Bhamo, the impetus given to our trade with Burmah would be immediate. It is for this reason that the mercantile community in Rangoon feel so much interest in the question, while they continue to attach so much importance to the further distinct and separate scheme of railway communication with China by a more direct route; a measure which, however vigorously prosecuted, will require a considerable period of time to elapse before completion.

10. The real difficulties of the party would be, probably, in the passage of the hills between Bhamo and the Shan towns, a distance of about 35 miles, and the only Europeans who of late years have visited Bhamo, viz., Dr. Williams in 1863 and the Right Rev. Bishop Bigandet in 1865, were persuaded of the feasibility of the journey, and were both ready to attempt it.

11. A remaining difficulty is to obtain the assistance of the Court of Ava to the mission; and it must be confessed that hitherto they have shown great distrust of any such expedition, and have thrown every obstacle in the way of its fulfilment. It is possible, therefore, that from this cause it may be found impracticable to carry out the measure; but I think we should not cease to bring before the King the continued desire of the British Government that the route should be opened, and endeavour to persuade him of the palpable advantages which would accrue to his dominions by his co-operation.

12. I would propose that the expedition be composed of three; one as head, the second an engineer, and the third a medical officer. Composed in this way, the party would be able to report more fully on all subjects connected with the route. The first officer would acquaint himself with the position of the several authorities with whom they might come in contact, and explain to them the objects of the mission; the second could report on the features of the country and nature of the route; and the third on the products and articles of commerce.

13. They would be required to obtain a guard of Khakyens to guide them through the hills; but beyond this no permanent guard would be probably necessary, except their own armed followers.

14. It is difficult to decide whether the party should be restricted in their advance to the Shan towns of Sanda, Mounghsan, Mowun, or Mounghmo, or that they be permitted to advance to Momein, Yunchan, or even Talifoo; but I am inclined to think that the limit should be fixed at Momein, unless unusual facilities and inducements there present themselves for a further advance.

15. The cost would probably be—

									<i>Rs.</i>
Monthly pay of Leader	-	-	-	-	-	-	-	-	1,200
„ Engineer	-	-	-	-	-	-	-	-	1,000
„ Medical Officer	-	-	-	-	-	-	-	-	1,000
								<i>Rs.</i>	3,200

	Rs.
For five months - - - - -	16,000
Fare of party to Bhamo - - - - -	1,000
Hire of Khakyens - - - - -	500
Presents for Shan Chiefs and Khakyens - -	2,500
Contingencies - - - - -	3,500
Rs.	23,500

Or say a total of 23,500 rupees.

16. I have not thought it necessary to enter so fully into the importance of the re-opening of the Bhamo route as I would have done had I not been aware that the subject had been already under the careful consideration of Government, as shown by the communication I have referred to in the first paragraph of this letter.

17. If a party be sanctioned by Government, and if I can obtain the co-operation of the King of Burmah, it could not start before the latter end of October, or beginning of November, that is to say the close of the rains. But I would solicit the orders of his Excellency the Viceroy as to whether I should introduce the subject with the Court of Ava, and whether, if circumstances be favourable, an expedition such as I have referred to would meet with his Excellency's sanction.

From the Secretary to the Government of India, Foreign Department, with the Governor General, to the Chief Commissioner, British Burmah (No. 712); dated Simla, 18 July 1867.

I HAVE received and laid before his Excellency the Governor General in Council your Letter, dated 21st ultimo, No. 127P. 54P.S., proposing the dispatch of an expedition to explore the trade route between Ava and the Western frontier of China *via* Bhamo.

2. His Excellency in Council doubts the expediency of this proposition, and would rather confine action at present to the inquiry already sanctioned and commenced, for the discovery of the best route direct from Rangoon to the frontier of China. It does not suit the convenience of the Government of India to furnish a second party of explorers.

3. You do not show how the trade *via* Bhamo, which in 1855 was estimated at half a million sterling, has now become extinct, or nearly so. This result must have been brought about by some strong causes, which an exploring party might ascertain, but could not remove. Probably these causes will be found to lie in the political state of the country and the insecurity of life and property.

4. Should the Government of India eventually determine to despatch you on a mission to Mandalay, there will be no objection to your speaking to the King on the subject of the old caravan route, and endeavouring to obtain all the information which may be available as to its present condition. But as matters now stand in Burmah, his Excellency in Council cannot sanction more being done.

5. Indeed, his Excellency in Council can hardly conceive any step which, under present circumstances, would be more imprudent than for British merchants to settle at Bhamo, or a British official to be stationed there for any purpose.

(Political.—No. 189.)

The Secretary of State for India to the Governor General of India in Council.

Sir,

India Office, 23 November 1867.

Para. 1. I LEARN from the Letter of your Excellency's Government in the Foreign Department, No. 138, of the 26th August 1867, that you have negatived

Colonel

Colonel Fytche's proposal to explore the ancient caravan route from Ava to the Chinese frontier, *viâ* Bhamo, a route which, though now closed, probably owing to the disturbed state of the country, formerly commanded a trade valued at nearly half a million sterling annually, and therefore is not unlikely to possess many natural advantages.

2. These it may be possible to utilize, though, in the present disturbed state of the country, it may be premature to take any immediate steps towards doing so.

3. But since your Despatch was written the objection urged by you, that another exploring party is now carrying on its operations, no longer applies, its proceedings having been suspended at your suggestion, in accordance with my Despatch, No. 111, dated 31st October 1867, in the Public Works Department. And as the exploration of these ancient caravan routes is, in the opinion of Her Majesty's Government, in itself desirable, it would be advisable to take advantage of any favourable opportunities for the attainment of this object, which may present themselves, whether now, in consequence of Colonel Fytche's visit to Mandalay, or at a future period.

I have, &c.

(signed) *Stafford H. Northcote.*

(Foreign Department.—Political.—No. 158.)

The Governor General of India in Council to the Secretary of State for India ;
dated Simla, 15 October 1867.

Sir,

In continuation of our Despatch, No. 138, dated 26th August last, we have the honour to transmit, for the information of Her Majesty's Government, the accompanying copy of an official despatch,* and of a demi-official note from the Chief Commissioner of British Burmah, in which that officer again urges the expediency of deputing a party to explore and open out the commercial route, *viâ* Bhamo, to Western China.

* Of 26 August 1867. No. 76.

2. We also beg to enclose a copy of our reply, from which you will perceive that, in concession to Colonel Fytche's renewed solicitations, we have given our sanction to the proposed expedition.

We have, &c.

(signed) *John Lawrence,*
&c. &c. &c.

From Colonel *Albert Fytche*, Chief Commissioner, British Burmah, and Agent to the Governor General, to the Secretary to the Government of India, Foreign Department, with the Governor General (No. 76); dated Rangoon, 25th August 1867.

I HAVE the honour to acknowledge the receipt of your letter, No. 712, of 18th July 1867, informing me that his Excellency the Viceroy and Governor General of India in Council does not think it expedient at present to sanction the despatch of a party to explore the trade route between Western China and Burmah, *viâ* Bhamo, as suggested in my letter, No. 127 P. 54 P.S., dated 21st June last; and with reference to the remark in the 3rd paragraph of your letter, pointing out that the reason for the suspension of the trade *viâ* Bhamo (estimated in 1855 at half a million sterling) had not been given in my communication, I now beg to lay before you the causes which it is believed have led to the temporary extinction of this valuable line of commerce.

2. The Bhamo route, leaving the town of that name on the Irrawaddy, runs in a north-eastern direction to Talifoo, the present capital of Western Yunan, passing in its course over the Khakyen Hills, then through a narrow belt of

Shan States, and so reaching the border towns of Yunan, viz., Momien or Maington, whence by Yanchan (the centre of the trade in Western Yunan) it proceeds to Talifoo.

3. The trade which formerly flowed east and west by this line has been interrupted by the progress of the Mahomedan insurrection in Yunan.

The rebel Pansees have their seat of Government at Talifoo, and for years past have been too much engaged against the Chinese authorities to devote any attention to the trade with Burmah. Meanwhile the Khakyens on the hills eastward of Bhamo have, in the disturbed state of the neighbouring powers, succeeded in establishing for themselves a position they never before occupied.

They hold the passes through the hills, and would now probably require to be paid before allowing caravans to cross.

Similarly, the Shan States between the Khakyen hills and the frontier Yunan towns are not able to show any activity in restoring the trade which to them was most important. Originally subject to Burmah, they came under Chinese rule about 100 years ago, and, on the occasion of the Pansee outbreak, became involved in the conflict between the new power and the Chinese Government, and are now divided between these authorities, though mostly subject to the Pansees.

4. It will be seen, therefore, that the Pansee rebellion has been the cause of the cessation of trade from Yunan to Bhamo, inasmuch as the disorganization of Yunan itself has, for the time, diverted the energies of the inhabitants to other more pressing events, and has enabled the occupiers of the route to throw new difficulties in the way of its future passage. Still there is no one of the different parties who would not gladly see the trade *via* Bhamo revive. It is, of course, useless for the Khakyens to hold trade routes through which no trade flows, and they are quite alive to this fact. They are anxious for the re-establishment of the old traffic, and state their readiness to give protection to future caravans. Thus, in 1863, one of the chiefs expressed himself to Dr. Williams, who visited Bhamo, in the following terms:—

“I will make a road across my district, and will conduct any number of merchants safely into China. No other route shall be like it, and I don't care whether they be English, Burmese, or Chinese. I want them through my district, and will guarantee that nothing shall happen to them.”

5. The Shan chiefs also would only too gladly see the old interchange of commodities renewed. They are an enterprising race, and the present unsatisfactory position they occupy, disunited and preyed upon by both Chinese and Pansees, makes them anxious for any movement which would likely lead to a more satisfactory state of affairs, and enable them to develop their national industry.

6. The Pansees are now so well established, apparently, that they only require a specific inducement to make them again send their caravans to Bhamo. They are not in immediate contact with the hills through which the passes lead, and are therefore deterred from attempting the passage; while it is uncertain what difficulties may be experienced by them in its execution.

7. The circumstances appear to my mind exactly those where the interposition of a neutral interest might have the best result in solving the various obstacles at present existing,—in themselves not great, but still, from their nature, incapable of early solution by the parties affected. I feel sure that a British mission would find the task by no means a difficult one, and that their influence would be readily yielded to by those whose common interest points, if in other instances dissimilar, to the establishment of trade.

8. The present time appears to me most opportune for undertaking such a measure. Previous to this the uncertain condition of the Pansee Government would probably have prevented any definite action in the matter; but now their power is sufficiently established, as far as we may judge from our present knowledge of their affairs, to take up the question in a satisfactory way. To the King of Burmah, also, it is increasingly important that he should neglect no opportunity of improving the trade of his dominions, and thereby of replenishing his fast failing revenue. If at any time likely to give heed to propositions which
have

have this object in view, I should anticipate the present to be the occasion on which they could be best brought forward.

9. Of the importance of reaching Western China at some early period by means of our trade, I cannot speak too strongly, the urgency being that the period should not be too far distant. It is for this reason that the propositions to re-open traffic by the Bhamo route stands on a different footing from that of the proposed direct railway route from Rangoon to China; in fact, the two schemes are so distinct, that the progress of the one need not in any way influence the other undertaking. The object of the Bhamo route party would be to re-open a temporarily closed trade by a line of country already known. The object of the other survey is to discover a route by which a railway may be constructed.

10. The country to be reached from Bhamo is the northern portion of Yunan and Sechmen, say above the 25° parallel of north latitude. The points aimed at by the railway survey lie between Kiang Hung and Maing Maing, or say from the 22° to 24° north latitude; at least, if forced to run further north, the extreme length of the railway will be a serious obstacle to its success. The result of the Bhamo mission, if successful, would be felt at once in a large development of our trade; the construction of the projected railway would not likely be completed for very many years.

11. It would be a mistake, therefore, to suppose that the measures being taken towards the construction of a railway by a direct route to Western China supersede the necessity of endeavouring to re-open the Bhamo route. The objects of the two schemes are sufficiently distinct to require them to be judged of on their own merits, and in one important feature—rapidity of execution and realization of results—the Bhamo project possesses unusual claims.

12. I have, in reviewing the Report of the China Route Survey for the past season (*vide* my letter, No. 355-4 C.C., of 25th June 1867, to Secretary to Government, Public Works Department), expressed my opinion that the survey should be continued until the Cambodia be reached, as the feasibility of the railway scheme can never be satisfactorily decided until a professional examination of the whole line has given all concerned the specific information necessary to the prosecution or abandonment of the line. But considering the undoubted importance of the early diversion of the Western China traffic towards a British outlet, I would on no account recommend that any measure towards that object be retarded on account of the more prospective, though possibly more extensive, project of reaching China by a railway from British Burmah.

13. There are two considerations which show how desirable it is the re-opening of the Bhamo route should be early undertaken, and accompanied with the influence and prestige of a Government mission. The first is, that it will certainly be attempted by the mercantile community, and the second, that the French authorities at Saigon have already deputed an influential mission along the course of the Cambodia, who have succeeded in reaching a point so far to the north as to intersect our line of communication with Southern Yunan.

14. I have said that in rapidity of execution and realization of results the re-opening of the Bhamo route claimed special attention; and so much are its feasibilities believed in, and the advantages to be derived from it felt by the mercantile community of Rangoon, that already a European gentleman has proceeded to Mandalay with the intention of attempting the passage to China. He has, under Article 4 of the Treaty of 1862, and the Rules attached to Act XII. of 1864, declared a consignment of goods for export beyond the Burmese territory; and it is probably in view to test the provisions of Article 7 of the same Treaty.

15. For many good reasons, however, it would be preferable that the solution of the question should be undertaken by Government rather than left to private enterprise. The difficulties to be encountered, either political or physical, but mainly the former, are such as require a definite adjustment through the interposition of our Government if we wish to avoid having the task forced upon us at a time when the circumstances will be much less favourable.

16. The French survey party which left Saigon more than a year ago (it was an error in my letter, No. 66 P., of 9th August, in stating that they had only been out five months), consists of five officers with a European staff of 25 persons, and a guard of 100 Annamite soldiers. They have probably ascended the Cambodia river, visiting the different semi-independent chiefs on the bank until they reached Kiang Hung. Up to this point the Cambodia is navigable for small boats, although there are in some places rapids. I reported in my letter just quoted, information had reached me that the party had arrived at Maington, to the eastward of Bhamo, whence they had written to Mandalay; but I am now inclined to think they more likely wrote from the places marked in Yule's map as Muang Lem and Muang Lou, in Burmese, Main-lon-gyee, and both on the road from Kiang Hung to Theinnee.

17. The traffic on the lower portion of the Cambodia river is understood to have been considerable in the earlier times; but after the destruction of Wint-Chian, or Chandapoori, in the beginning of this century by the Siamese, the traffic has almost ceased. But under French protection and guidance, the re-establishment of the trade will probably be effected, and we may be certain it is being aimed at.

18. It must be remembered that in 1837 Captain (now Major General) Macleod was deputed to Kiang Hung from Maulmain to endeavour to induce the Chinese traders from that great *entrepôt* to come onward through the Zimmay Shan States to Maulmain. The difficulties of this land route were too great, however, for the success of the enterprise. But if such a project appeared feasible to our Government, how much more likely of execution is the French attempt (if the river be navigable) to bring the China trade down the Cambodia? The mission have devoted a year to the important mission of examining the country between Saigon and Kiang Hung, and, if they can there establish a line of traffic, they will be richly rewarded.

19. I think it probable that from Kiang Hung they have turned to the north-west, or possibly due west, because the banks of the Cambodia above Kiang Hung for some distance are occupied by savage tribes who bar all passage through their country; but the intention of the party was to strike the Irrawaddy at Bhamo: and, as I reported in my previous letter, my information is to the effect that they were to the eastward of Bhamo when they wrote to the Court of Ava.

COPY of a demi-official LETTER from Colonel *Albert Fytche*, Chief Commissioner of British Burmah and Agent to the Governor General, to the Secretary to the Government of India, Foreign Department, with the Governor General; dated Rangoon, 26th August 1867.

I HAVE written to you officially by this mail explaining shortly the causes which have led to the closing of the Bhamo route to China, and I am somewhat anxious his Excellency the Viceroy would be pleased to reconsider the question of its re-establishment. I should anticipate that, on the conclusion of the new treaty, vigorous efforts will be made by the mercantile community to develop the trade with Upper Burmah, and through it with China; and I am aware that the houses in Rangoon are now making arrangements, or, indeed, have made arrangements, for river steamers suited not only for traffic to Mandalay, but also to Bhamo. It is certainly their intention to press for an agency at Bhamo. The Treaty of 1862 provides for merchants residing there, and the new treaty secures us the right of placing a British officer at that point; in fact, as I understand it, the provisions of Article 5 of Colonel Phayre's draft were expressly designed to meet this object, and I am persuaded that constant agitation will be kept up until the step is adopted.

I have mentioned in my official letter that a European gentleman has already passed a consignment of goods through the Custom-house for export to China, under Article 4 of the Treaty of 1862, and has proceeded to Mandalay for the purpose of bringing the question to an issue. The gentleman is Mr. Fowle, who has long been resident in Burmah, has a thorough knowledge of Burmese, and is known to the Court of Ava; and I have reason to believe that in this matter he

is

is in reality acting under the influence and with the support of the most important houses of business in Rangoon. He will, I am led to believe, make a definite effort to go by the Bhamo route to China, and doubtless has selected his particular time in anticipation of possible difficulties being thrown in his way in contravention of the existing treaty, when he will make a formal reference to me at Mandalay and call for my support. I need hardly say that the mercantile community here look to a large development of trade with Upper Burmah from the opening of the Bhamo route, and there can be no doubt that they do not overrate the immense advantages which in the future will accrue from such a measure. The great thing is, that it should be rightly started, and I think this can only be done by Government. I think I could so explain the advantages to the King, that the obstacles hitherto shown to it may be overcome; and I am quite sure that, were I authorised specifically to announce the intention of sending a British mission, the King would agree at once.

I look with interest to the arrival of the French survey party at Mandalay and the effect of their presence there. They are, I believe, in sufficient strength to mark their importance—five officers and 25 European subordinates, with 100 Annamite soldiers; and I understand they maintain some considerable dignity in their style. As they have spent some 12 months in the leisurely ascent of the Cambodia to Kyang-Hung, there can be no reasonable doubt that they have been politically busy.

The Native States on the lower portion of the Cambodia are partly tributary to China and partly to Cochin China, but as you reach Kyang-Hung they are nominally under Burmah. The French could, no doubt, quickly assume under their protection the lower chiefs, but the point they must have in view is to enter into communication with the Shan State of Kyang-Hung. This reaches eastward to China proper, and through it runs the main route of Chinese traffic westward to the Takaw Ferry and into the true Burman Shan States.

The position of the town of Kyang-Hung itself, in fact, is such that it commands the line of trade from the westward to China proper and to the southern portion of Yunnan. If the French have succeeded, or hereafter succeed, in forestalling us there, they will have reason for congratulation.

A great deal depends on the capabilities of the Cambodia River for navigation. I believe there are rapids in its course, which may require transshipment of goods in the upper portion of its course between Saigon and Kyang-Hung; but against such obstacles on that route we have to compass the long land journey from Kyang-Hung to the Irrawaddy, at whatever point it may be reached. Their visit to the Court of Ava and then down the Irrawaddy to Rangoon is, doubtless, to satisfy themselves of our position with the King of Burmah, as well as his feelings and status towards the far easterly Shan States, who are but nominally tributary to him.

It becomes important that the survey towards Kyang-Hung should be certainly persevered with this year, so that our party may show themselves, as it were, to the authorities there, and so far counteract the effect of the French visit; and it is to my mind also very important we should as soon as possible establish trade relations with Western China through Bhamo, and so early divert as much traffic as we can by that route. It is a long look forward to the construction of a railway to Kyang-Hung, or any neighbouring point to British Burmah.

I anticipate I cannot receive the answer from the King of Burmah to my Despatch about the treaty before the 10th proximo, which, if favourable, I propose to start for Mandalay on the 14th.

From the Secretary to the Government of India, Foreign Department, with the Governor General, to the Chief Commissioner of British Burmah (No. 912); dated Simla, 12 September 1867.

I HAVE received and laid before the Right Honourable the Governor General in Council your letter, No. 76, dated 26th August, in which you again urge the expediency of deputing a party to explore and open out the commercial route *via* Bhamo to Western China.

2. The cessation of the large trade which formerly took this route is explained

by the disturbed state in which the border districts were for some time involved. These obstacles are stated no longer to exist, and the chiefs concerned are described as anxious for the re-establishment of the trade. But the arrangements necessary for setting the traffic in motion must, in your opinion, be made by ourselves.

3. Under these circumstances, his Excellency in Council consents to the deputation of a party as proposed in your letter of 21st June, at an aggregate cost of 23,500 rupees, which covers the cost for five months.

4. The party should be accompanied by a havildar's guard of 10 or 12 men.

5. The agents must be selected with great care; they must be persons of prudence and experience in the Burmese manners and language. If Captain Sladen could be spared for the conduct of the expedition, and arrangements made for temporarily filling his place, it might be proper to entrust the expedition to his charge.

Under any circumstances, you will exercise every care and precaution in the selection of the agents employed.

		Rs.
*Monthly pay of Leader	-	1,200
" " Engineer	-	1,000
" " Medical Officer	-	1,000
Total	-	Rs. 3,200
For five months	-	16,000
Fare of party to Bhamo	-	1,000
Hire of Khakyens	-	500
Presents for Shan Chiefs and Khakyens	-	2,500
Contingencies	-	3,500
Total	-	Rs. 23,500

(No. 913.)

Copy to Financial Department for further orders.

SERVICE MESSAGE.

From Simla, dated the 18th September 1867, from Foreign Secretary, to
Rangoon, to Colonel *Fytche*.

"REFERRING to paragraph 4 of Letter, No. 912, dated 12th September, Viceroy gives discretion to increase the guard to accompany Bhamo expedition. It might also be expedient to procure from King some of his followers to smooth the way."

(Political, No. 207).

The Secretary of State for India to the Governor General of India in Council.

India Office, 9 December 1867.

1. I HAVE had under my consideration in Council the letter of Your Excellency's Government, No. 158, in the Foreign Department, dated 15th October 1867, respecting the proposed exploration of the ancient caravan route from Burmah, *vid* Bhamo, into Western China.

2. The sentiments of Her Majesty's Government on this matter have already been communicated to you in my recent Despatch, No. 189, of the 23rd November 1867, and I have now only to express their satisfaction that you have, owing to the cessation of disturbance in the country to be traversed, found it possible to acquiesce in the recommendations of the Chief Commissioner of British Burmah, and to sanction the deputation of a party to "explore and open out" the route in question.

3. The officer in charge of the party, as well as the engineer and medical officers under his orders, will, of course, have been instructed to keep full and accurate journals of all noteworthy occurrences and phenomena, as well as of the character of the populations, and the natural products of the country through which they may pass.

I have, &c.
(signed) *Stafford H. Northcote.*

CHINA ROUTE SURVEY.

MAP

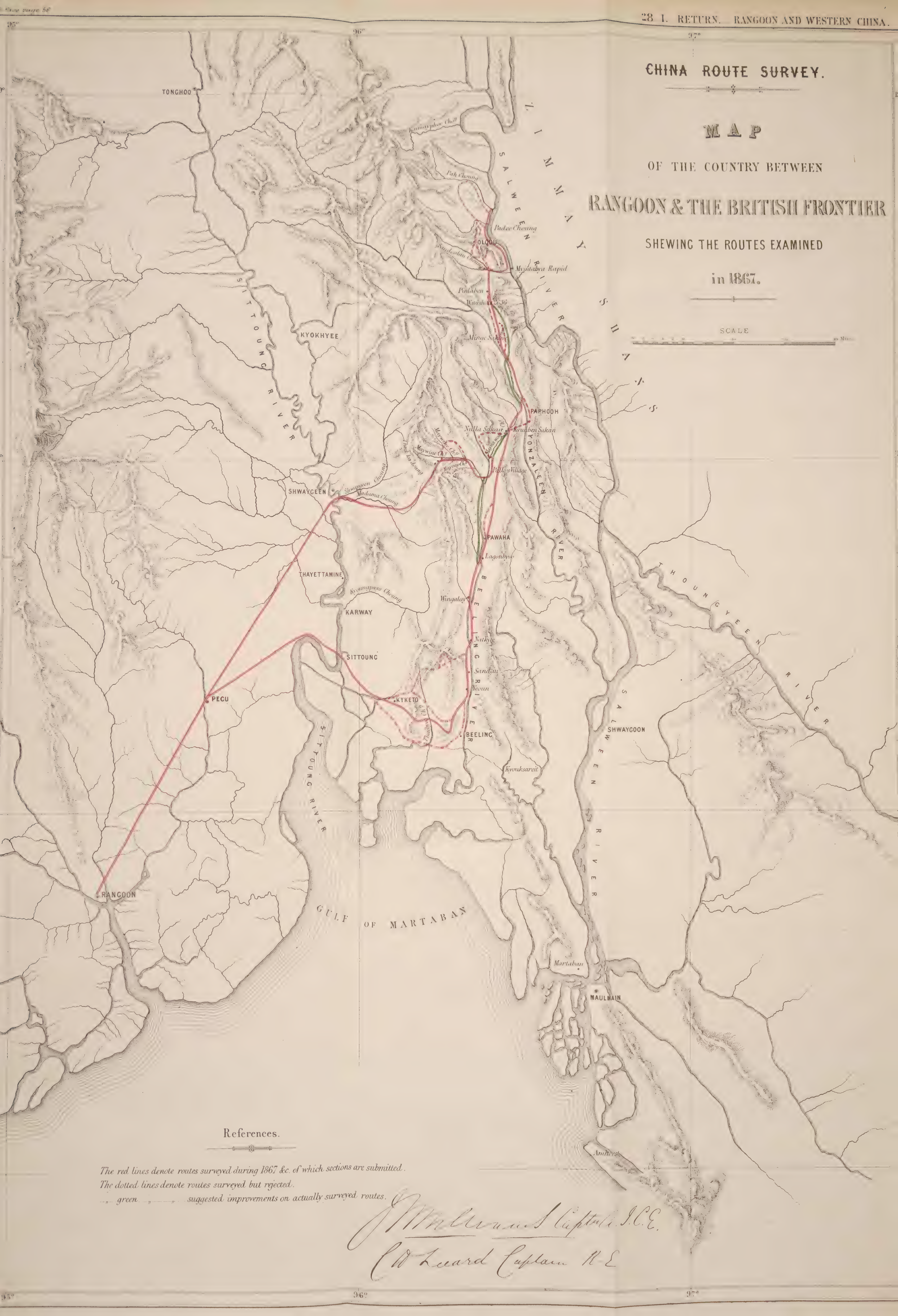
OF THE COUNTRY BETWEEN

RANGOON & THE BRITISH FRONTIER

SHEWING THE ROUTES EXAMINED

in 1867.

SCALE



References.

The red lines denote routes surveyed during 1867 &c. of which sections are submitted.
 The dotted lines denote routes surveyed but rejected.
 green suggested improvements on actually surveyed routes.

J. Mullens Captain R.E.
C. W. Leard Captain R.E.

RANGOON AND WESTERN CHINA.

COPIES of the SURVEY REPORT of Captains *Williams* and *Luard*, dated 15 June 1867, and of the JOURNALS, MAPS, SECTIONS, &c. attached thereto, respecting *Rangoon and Western China*; of the LETTER forwarding the Report to the Chief Commissioner; and, of all CORRESPONDENCE on the Subject, by Telegram or Letter, between the Governor General and Chief Commissioner subsequent to 30 June 1867; and between the Governor General and Secretary of State for *India* subsequent to 15 August 1867; &c. (in continuation of Parliamentary Paper, No. 421, of Session 1867).

(*Mr. Bazley.*)

Ordered, by The House of Commons, to be Printed,
3 December 1867.

[*Price 1s. 6 d.*]

28—I.

Under 8 oz.

RANGOON AND WESTERN CHINA.

RETURN to an Address of the Honourable The House of Commons,
dated 23 March 1868 ;—for,

“COPIES of the REPLIES to the several MEMORIALS contained in the Return to the Address of the House, dated the 12th day of August 1867, on the subject of Direct COMMERCE with the *Shan States* and *West China* from the Port of *Rangoon* :”

“And, of all further MEMORIALS thereon subsequent to those contained in that Return, and of the Replies thereto (in continuation of Parliamentary Paper, No. 28-I., of Session 1867-8).”

India Office, }
31 March 1868. }

J. W. KAYE,
Secretary, Political Department.

— No. 1. —

The Secretary to the Liverpool Chamber of Commerce to
Sir *Stafford Northcote*, Bart., M.P.

Chamber of Commerce, Liverpool,
7 November 1867.

Sir,

I AM directed by the President to transmit Memorial of this Chamber in favour of the resumption of the survey of the route between the port of Rangoon and Western China, an order for the suspension of which has been issued by the India Office.

I am, &c.
(signed) *William Blood*,
Secretary.

PROPOSED NEW ROUTE TO CHINA.

To the Right Honourable Sir *Stafford Northcote*, M.P., Secretary of State for India.

The further Memorial of the Liverpool Chamber of Commerce most respectfully sheweth :—

1. THAT your Memorialists have long been deeply impressed with the great advantages that would result to our eastern trade if a new route to China at its south-western provinces, through British Burmah and Burman Shan States, from Rangoon, could be established.

2. That, to this end, they have on several occasions strongly memorialised successive Governments ; first, that the needful efforts should be made for a treaty of commerce with the King of Burmah, stipulating for moderate transit duties on merchandise passing through his dominions, and afterwards, when such treaty had been obtained, for a Government survey of the country from Rangoon to the borders of China, a distance of less than 500 miles.

3. Your Memorialists took this course because, from private surveys, they had reason to believe that a practicable route might be opened ; but such sur-

veys necessarily lacked the authority and completeness of one conducted under the sanction of the Government.

4. That your Memorialists will not now trouble you with a repetition of the views urged in these several memorials, but would simply refer to them as bearing the following dates :—23rd August 1860 ; 5th September 1862 ; 6th October 1863 ; 19th July 1866.

5. That repeated memorials have also gone up to the same effect from the East India and China Association, and from the Shipowners' Association of this town.

6. That the importance which your Memorialists have always attached to their object was confirmed on the 4th August 1864, when Lord Stanley, now Her Majesty's Secretary of State for Foreign Affairs, favoured them with his presence at one of their meetings, and expressed his opinion, when alluding to Rangoon, that "that part of India has not obtained the attention it deserves," and even looked forward to a time, "not far distant, when all that large territory lying south-east of Calcutta, British Burmah, and the adjoining provinces, shall be under a more independent Government, at least, a separate Lieutenant Governorship."

7. That, with their strong convictions of the importance of British Burmah thus confirmed, your Memorialists were rejoiced to hear that the Government survey, for which they and other commercial bodies had so long pleaded, had been at length ordered, and still more when its first result, covering fully one-half, and that probably the most difficult portion of the projected line, had shown that, so far, railway communication was perfectly practicable, and would meet with even fewer difficulties than had been expected.

8. That your Memorialists would beg to refer to the communication of the Chief Commissioner of British Burmah addressed to the Governor-General of India, and dated 25th of June, 1867, wherein he says :—"Whatever may be thought of this isolated portion of the projected line, I have no hesitation in strongly recommending that the survey be continued to the confines of China, and that it be resumed at the spot where this year's work left off."

9. It was, therefore, with great satisfaction that your Memorialists learned that orders had been issued by the Governor-General of India that the survey should be resumed this year.

10. But it is with a corresponding disappointment that they have heard, on reliable authority, that a telegraphic dispatch from the Secretary of State for India has suspended the survey already half made, and promising so satisfactory a result.

11. In the absence of any direct information from the India Office your Memorialists are utterly unable to imagine any good or even plausible reason for this suspension of the survey, and they would most earnestly press Her Majesty's Government to give orders for its immediate resumption, and this with the utmost promptitude, so as to enable it to proceed without further loss of time.

12. As a further argument for the completion of the survey, your Memorialists would remind you of the progress which the French, starting from their port of Saigon, have made in their survey. With an expedition, ample in numbers, replete with scientific ability, and on a scale worthy of the enterprise, they have explored the whole of the Cambodia River for full 1,200 miles, and are now within the territories of the King of Burmah, and it is not improbable will ere long be negotiating with that monarch for possession of the Shan States lying to the west of the Chinese province of Yunnan. In such case your Memorialists would deeply regret that advantages falling so naturally to British enterprise, if unobstructed by official opposition, must be thenceforth held at the will of a foreign power.

13. Your Memorialists will not for one moment believe that the cost of the survey has been the motive for its suspension, seeing that it is so insignificant

as compared with the great object in view,—a cost, moreover, a great portion of which has already been incurred.

14. Your Memorialists, therefore, earnestly request that Her Majesty's Government will press on the survey this year as far as possible.

Signed on behalf of the Liverpool Chamber of Commerce,
Charles E. Rawlins, jun.,
 Liverpool, 7 November, 1867. President.

— No. 2. —

Herman Merivale, Esq., to the Secretary to the Liverpool Chamber of Commerce.

India Office, 15 November 1867.

I AM directed by the Secretary of State for India to acknowledge the receipt of your letter, dated the 7th instant, forwarding a memorial from the Liverpool Chamber of Commerce in favour of the resumption of the survey of the route between the Port of Rangoon and Western China; and am to inform you in reply, that the survey alluded to has been temporarily suspended in compliance with the wish of the Governor of India, on political considerations. I enclose a copy of the *letter addressed to the Government of India on this subject.

A similar reply was sent to the following Memorials.

— No. 3 —

The Secretary to the Huddersfield Chamber of Commerce to Sir *Stafford Northcote*, Bart., M.P.

Chamber of Commerce, Huddersfield,
 18 November 1867.

Sir,

I AM directed by the Council of this Chamber to forward to you the enclosed memorial in favour of the continuation of the survey of the proposed new route to Western China. Trusting it will receive the favourable consideration of Her Majesty's Government,

I have, &c.
 (signed) *Charles Mills*, Secretary.

To the Right Honourable Sir *Stafford Northcote*, Baronet, M.P.,
 Secretary of State for India.

The Memorial of the Huddersfield Chamber of Commerce.
 Sheweth,

THAT the attention of your Memorialists has been directed for many years past to the question of the practicability of establishing a more direct commercial intercourse with Western China, and they are strongly impressed with the advantages that would result to our Eastern trade if a new route through British Burmah and Burman Shan States from Rangoon was established.

That

* Public Works Despatch, 31 October, No. 111 of 1867. See page 47 of Parliamentary Paper, No. 28—1 of Session 1867—8.

That your Memorialists have, on several occasions, pressed upon the attention of successive Governments the importance of entering into such arrangements with the King of Burmah, and of making such preparations by way of surveys or otherwise, as would expedite and facilitate the opening of such new route.

That your Memorialists had learnt, some time ago, with satisfaction, that the Government survey, which they had so long and so frequently urged, had at length been ordered, and, more recently, that the survey, so far as it had been preliminarily made, confirmed their opinion as to the practicability of the route proposed by Captain Sprye.

That your Memorialists have recently learnt with surprise and deep regret that the orders which had been issued by Her Majesty's Government for the completion of the survey from Rangoon to the confines of Western China, have been revoked or suspended.

That the importance of the proposed new route has become so impressed upon your Memorialists, that they feel impelled to press upon Her Majesty's Government the desirability of directing the immediate resumption of such survey, which becomes more important from the fact that the French expedition have made considerable progress in surveying the Cambodia River, and are now in the territories of the King of Burmah, with whom they may, ere long, be negotiating for the possession of the Shan States, lying to the west of the Chinese province of Yunnan.

Your Memorialists therefore earnestly request that Her Majesty's Government will order the immediate resumption of the survey, so that it may be completed without loss of time.

And your Memorialists will ever pray, &c.

Signed, on behalf of the Chamber,

Wright Mellor, President.

— No. 4. —

The Secretary to the Dewsbury Chamber of Commerce to Sir *Stafford Northcote*, Bart, M. P.

Route to China through Burmah.

Sir,

Chamber of Commerce, Dewsbury,
21 November 1867.

I WAS instructed by the Council of the Dewsbury Chamber of Commerce, at their meeting held last night, to direct your attention to a memorial sent by the Council, on or about May of the present year, to the Right Honourable the Earl of Derby, First Lord of Her Majesty's Treasury, and the other Cabinet Ministers, praying (amongst other things), that Her Majesty's Government would be pleased to order and direct that a survey be made, from Rangoon to Western China, through Burmah, and calling special attention to the route, so long and so ably advocated by Captain Sprye and his son; I was also further instructed to forward to you the subjoined copy of a resolution adopted by the Council of the Dewsbury Chamber at the meeting held last night.

I have, &c.

(signed) *Jesse Smith*, Secretary.

COPY of RESOLUTION.

Resolved,

"THAT this Council learns with deep regret that a telegraphic despatch from the Secretary of State for India has suspended the survey ordered to be made (and already half made), of the proposed commercial route from Rangoon to Western China, through the Burman Shan States; but earnestly hopes

hopes that Her Majesty's Government will give orders that the said survey be immediately recommenced and proceeded with; and that the Secretary be and he is hereby directed to forward a copy of this resolution to the Right Honourable Sir Stafford Northcote, Bart., M.P., Her Majesty's Secretary of State for India."

Examined,
J. S.

— No. 5. —

The Chairman of the General Brokers' Association to Sir *Stafford Northcote*, Bart., M.P.

3, Browns Buildings, Liverpool,
25 November 1867.

Sir,

I AM requested by the General Brokers' Association to address you on the subject of the long contemplated Overland Route from Rangoon to the South Western Provinces of China.

Being convinced that the formation of a tramway over the proposed route would tend to open up a large and remunerative trade with Great Britain, this association heard with satisfaction of a survey having been ordered by Government, and this satisfaction was further increased on recently receiving the information that the contemplated route was found to be perfectly practicable to the confines of British Burmah, which includes quite one-half of the projected line.

This association confidently expected the completion of the survey this season, especially after the very favourable opinion of the Chief Commissioner of British Burmah, as expressed in his report to the Governor General of India, and therefore hears with regret that the survey is to be suspended in accordance with orders from the Home Government.

Looking to the desirability of consolidating and extending British interests in that important part of India, and the great advantage which would accrue to this country from the opening up of fresh fields for her commerce, this association respectfully begs to urge upon Her Majesty's Government the advisability of continuing the survey without delay, with the view of establishing the projected communication between our own possessions and Western China at the earliest period.

I have, &c.
(signed) *B. W. Harrop*, Chairman.

— No. 6. —

The Secretary to the Leicester Chamber of Commerce to
Lord John Manners, M.P.

Leicester Chamber of Commerce,
Office, 24 Friar Lane,
2 December 1867.

My Lord,

I AM desired by the Leicester Chamber of Commerce to call your Lordship's attention to a subject which is likely to prove of considerable consequence to the extension of our trade with Eastern Asia, viz., the survey from Rangoon to Western China, which was ordered by Lord Cranbourne, the late Secretary of State for India, and which has since been stopped by order of the present Secretary, Sir Stafford Northcote.

It appears from the information we have received that this route would open out a new and very extensive district for our trade, and that by delay we are risking the loss of prior occupation, as the French are progressing in this direction.

We think it desirable that the matter should be ventilated during the present Session of Parliament, as the best time for recommencing the survey is considered to be during the present month.

I am therefore desired to request your Lordship's support and assistance to any endeavour which may be made to induce a resumption of the survey.

I have, &c.
(signed) *William Rowlett*, Honorary Secretary,
Leicester Chamber of Commerce.

— No. 7. —

The Secretary to the Batley Chamber of Commerce to
Sir Stafford Northcote, Bart., M.P.

Chamber of Commerce, Batley,
5 December 1867.

Sir,
I HAVE the honour to forward herewith a Memorial from the Batley Chamber of Commerce, praying for the resumption of the survey between Rangoon and Western China.

I am, &c.
(signed) *Matthew S. Scholefield*, Secretary.

To the Right Honourable *Sir Stafford Northcote*, Baronet, M.P.,
Secretary of State for India.

The humble Memorial of the Batley Chamber of Commerce.

Showeth,

1. THAT your Memorialists have become deeply impressed with the great advantages that would result to our eastern trade if a new route to China at its South-western Provinces through British Burmah and Burman Shan States, from Rangoon, could be established.

2. That, to this end, they have strongly memorialised Government for a Government survey of the country from Rangoon to the borders of China, a distance of less than 500 miles.

3. That, with their strong convictions of the importance of British Burmah, your Memorialists were rejoiced to hear that the Government survey, for which they and other commercial bodies have so long pleaded, had been at length ordered, and still more, when its first result, covering fully one-half, and that probably the most difficult portion of the projected line, had shown that, so far, railway communication was perfectly practicable, and would meet with even fewer difficulties than had been expected, and it was also with great satisfaction that your Memorialists learned that orders had been issued by the Governor General of India that the survey should be resumed this year.

4. That it was with a strong feeling of disappointment that your Memorialists heard, on reliable authority, that a telegraphic dispatch from the Secretary of State for India has suspended the survey, already half made, and promising so satisfactory a result.

5. That in the absence of any direct information from the India Office, your Memorialists are utterly unable to imagine any good or even plausible reason for this suspension of the survey, and they would therefore most earnestly press Her Majesty's Government to give orders for its immediate resumption, and this
with

with the utmost promptitude, so as to enable it to be proceeded with without further loss of time.

6. That, as a further argument for the completion of the survey, your Memorialists would remind you of the progress which the French, starting from their port of Saigon, have made in their survey. With an expedition, ample in numbers, replete with scientific ability, and on a scale worthy of the enterprise, it is stated that they have explored the whole of the Cambodia River for full 1,200 miles, and are now within the territories of the King of Burmah, and it is not improbable, will ere long be negotiating with that monarch for possession of the Shan States, lying to the west of the Chinese province of Yunnan. In such case your Memorialists would deeply regret that advantages falling so naturally to British enterprise, if unobstructed by official opposition, must be thenceforth held at the will of a foreign Power.

7. Your Memorialists, therefore, earnestly request that Her Majesty's Government will press on the survey this year as far as possible.

Signed on behalf of the Batley Chamber of Commerce.

Batley, 5 December 1867.

John Jubb,
President.

— No. 8. —

MEMORIAL of the Glasgow Chamber of Commerce.

To the Right Honourable Sir *Stafford Northcote*, Bart., M.P., Secretary of State for India in Council.

The Memorial of the Chamber of Commerce and Manufactures in the City of Glasgow, incorporated by Royal Charter,

Respectfully Sheweth,

THAT your Memorialists have long entertained the opinion that it would be of the utmost importance to the commerce of this country if a route were opened between Rangoon and the interior of Western China, and they expressed their views on this subject in a memorial presented in November 1863 to the Right Honourable Viscount Palmerston, then first Lord of the Treasury.

That the information which your Memorialists possess on the districts through which the various routes hitherto proposed pass does not justify them in expressing any decided opinion either with regard to any one of these proposed routes, or as to the practicability of opening any route.

But the Memorialists would respectfully urge upon Her Majesty's Government the propriety of completing the survey which has already been commenced, with the view of authoritatively establishing whether it is practicable to open up such a line of communication.

And your Memorialists will ever pray,

Alex. Ronaldson, President.

Signed in the name of the Directors and sealed with the seal of the Chamber, Glasgow, this 4th day of December 1867.

— No. 9. —

The Chairman of the Birmingham Chamber of Commerce to
Sir *Stafford Northcote*, Bart., M.P.

Birmingham Chamber of Commerce,
Offices, Exchange Buildings, New-street,
18 December 1867.

Sir,

I HAVE the honour to enclose a memorial from the Council of this Chamber praying for the resumption of the survey of the new trade route to the Shan States and Western China, direct from Rangoon.

I have, &c.
(signed) *Alfred Field*,
Chairman.

To the Right Honourable Sir *Stafford Northcote*, M.P., Her Majesty's Secretary
of State for India.

The Memorial of the Council of the Birmingham Chamber of Commerce,

Respectfully sheweth,

That your Memorialists, as representing the trade of the town and district, are largely interested in opening up a new direct route from Rangoon through the Shan States to Western China (Captain's Sprye's route).

Your Memorialists have heard with great regret that the survey ordered to be made, and actually made last season for about half the distance, has been stopped.

Your Memorialists greatly hope that your department will give instructions for the immediate resumption of this survey, and as the season suitable for operations has already arrived, your Memorialists respectfully urge upon your department the extreme importance of a telegram being immediately forwarded to the Indian authorities, ordering an instant resumption of the survey.

And your Memorialists will ever pray, &c.

Signed on behalf of the Council of the Chamber.

Alfred Field, Chairman.

RANGOON AND WESTERN CHINA.

COPIES of the REPRIS to the several MEMORIALS contained in the Return to the Address of the House, dated 12th August 1867, on the subject of direct COMMERCE with the *Shan States* and *West of China*, from the Port of *Rangoon*; and of all further MEMORIALS thereon subsequent to those contained in that Return, and of the REPRIS thereto (in continuation of Parliamentary Paper, No. 28—1. of Session 1867-8.)

(*Mr. Baines.*)

Ordered, by The House of Commons, to be Printed,
1 April 1868.

192. *Under 1 oz.*

EAST INDIA (RANGOON AND WESTERN CHINA).

RETURN to an Address of the Honourable The House of Commons,
dated 23rd June 1868;—for,

“COPY of the DESPATCH of the late Governor General of *India*, Lord *Elgin*, relative to the proposed construction of a COMMERCIAL WAY from *Rangoon* to *Kianghung*, referred to in the LETTER addressed by the Secretary of State for *India* to the Huddersfield Chamber of Commerce on the 28th day of January 1864; with any Enclosures or Documents referred to in the said Despatch.”

India Office, }
26 June 1868. }

J. W. KAYE,
Secretary, Political Department.

(*Mr. Baines.*)

Ordered, by The House of Commons, to be Printed,
30 June 1868.

C O N T E N T S.

Date.	From	To	Page.
4 November 1863 -	Lord Elgin - - - -	Sir C. Wood - - -	1
26 June 1863 - -	Lieutenant Colonel Phayre -	Colonel H. M. Durand - -	3
11 September 1861 -	Lieutenant Colonel Phayre -	Colonel H. M. Durand - -	4
29 July 1863 - -	Colonel H. M. Durand - -	Lieutenant Colonel Phayre -	7
14 August 1863 -	Lieutenant Colonel Phayre -	Colonel H. M. Durand - -	7
10 September 1863 -	Colonel H. M. Durand - -	Lieutenant Colonel Phayre -	8

Map shewing the Proposition, of Captain Richard Sprye and his Sons to Her Majesty's Ministers, for a Tram-Road or Railway from Rangoon to the N.E. of Pegu: and for extending the British-Indian Land Telegraph from Eastern-Pegu, *via* Esmok, to Canton. Hong-Kong, the other Consular Ports, the Capital of China, and to Bangkok, the Capital of Siam.

Main Lines of British-Indian Telegraph, as existing & in work, from Kurrachee, Bombay, Galle, Madras and Calcutta to Shoo-Gyen in Eastern Pegu.

The Kurrachee, Indus, Peshawar and Delhi Line.

The Bombay & Agra Line

The Kurrachee, Bombay and Nagpoor Line.

The Bombay, Malabar, Bellary and Hyderabad Line.

The Galle, Trincomalee, Trichinopoly and Mysore and Madras



THE EASTERN PENINSULA
AND
THE CHINESE EMPIRE

SHOWING CAPTAIN SPRYE'S PROPOSED ROUTE FOR
BRITISH & BRITISH INDIAN COMMERCE, AND FOR THE
EXTENSION OF THE LAND TELEGRAPH, TO WESTERN
AND INLAND CHINA, EASTERN TIBET, AND TARTARY
FROM THE PORT OF RANGOON.

- Red British Possessions
- Green Burmese
- Brown Siamese
- Purple Empire of Annam
- Yellow Chinese Empire
- Projected Rail or Tram Road, across Pegu,
- Projected Lines of Telegraph
- Existing British Indian and Pegu Telegraphs
- Open Ports in China and Japan.

Richard Sprye
Capt
H. H. F. Sprye

COPY of the DESPATCH of the late Governor General of *India*, Lord *Elgin*, relative to the proposed construction of a COMMERCIAL WAY from *Rangoon* to *Kianghung*; referred to in the LETTER addressed by the Secretary of State for *India* to the Huddersfield Chamber of Commerce, on the 28th day of January 1864; with any Enclosures or Documents referred to in the said Despatch.

(No. 12.—Foreign Department—(General).)

From the Right Honourable the Earl of *Elgin* and *Kincardine*, Governor General of *India*, to the Right Honourable Sir *C. Wood*, Bart., G. C. B., Her Majesty's Secretary of State for *India*, dated Camp, Dhurmsala, the 4th November 1863.

Honourable Sir,

I HAVE the honour to transmit herewith, for the information of Her Majesty's Government, copy of a correspondence, as per accompanying abstract of contents, on the subject of a proposal by the Chief Commissioner of British Burmah to make a survey from Shoe Gyeen to the west bank of the Salween, with reference to Captain Sprye's project to have a line of telegraph and tramway from Rangoon to Yunan in China.

2. Being of opinion that such a survey as that proposed by Colonel Phayre would entail much expense, and, moreover, that it is especially important that we should not awaken the suspicions of the Ava Court at the present stage of our negotiations for giving effect to the treaty entered into with it last year, I have declined to sanction his proposal, but have directed that any information respecting the character of the country through which the tramway and telegraph line in question would have to pass, which can be acquired by careful observation, and without giving umbrage to the authorities of Native States by the expedition proceeding up the Salween River, should be obtained and recorded.

(Government No. 164. of 1863.)

From Lieutenant Colonel *A. P. Phayre*, C. B., Chief Commissioner of British Burmah, and agent to the Governor General, to Colonel *H. M. Durand*, C. B., Secretary to the Government of *India*, Foreign Department, Governor General's head quarters, *viâ* Calcutta, dated Rangoon the 26th June 1863.

No. 2607.—Foreign
—General.

Sir,

IN my letter to your address, No. 210, and 11 September 1861, I had the honour to report on a projected line of telegraph and a tramway, to extend from Rangoon to a town situated on the south-west border of the province of Yunan in China, called Esmok. For ready reference I beg to submit a copy of that letter, and I add a map taken from one of the pamphlets published by Captain Sprye who projected the tramway.

2. It will be seen that Captain Sprye in the first place advocates the construction of a tramway to a place he designates as an Emporium on the west bank of the Salween, a little south of 20 degrees of north latitude. This spot will be passed by the Salween river survey party sanctioned in your letter No. 251. of 11 May last; I think that although it is doubtful whether a tramway from Rangoon to that spot would ever pay, and certainly we have at present no information which would warrant us to suppose it would pay, still that it is very desirable to know, and have laid down in a regular survey, what the engineering difficulties are from Shoe Gyeen to that place.

3. After having reached that place, should it be found practicable for the surveyor to go on to Kiangtung and Kiang Hung, (*vide* map) I should recommend that he be authorized to do so; I therefore beg to recommend that an officer may be appointed to survey the

route from Shoe Gyeen to the position of the so called emporium, and thence, in the direction indicated in the map, towards Kiangtung and Kiang Hung.

4. The superior officer should have a second under him in case of sickness or accident. After consideration as to the allowances to be recommended, I beg to state that the superior officer should be one of some standing who knows the country. I cannot name any one so well suited to the duty in question as Captain F. Fitzroy, at present superintendent of the topographical survey of Pegu. I should recommend that while employed, as now proposed, he should receive a staff salary of 500 rupees a month, and the second officer a salary of 300 rupees a month. Regarding travelling allowances, it is difficult to name any sum which would be likely be a fair rate for officers appointed for such a duty; I think it will be better for the Government to pay their travelling expenses, and those of the native establishment. For this purpose I would allow six elephants for the whole party. To purchase the elephants will probably require 5,000 rupees; for establishment of native surveyors, chainmen, mahoots, &c. I would allow (700) seven hundred rupees a month. This may appear high, but everything in this country is expensive, and it is only by dint of high pay that men can be induced to go into the jungle on such expeditions.

5. In my former letter, of which a copy is forwarded, I referred to the probable objections of the Burmese Government to a tramway being carried in the direction in question. During the time I was negotiating a treaty of commerce with that Government in October and November last, I carefully abstained from alluding to the subject of a proposed electric telegraph and tramway across the Burmese Shan Territory, because I considered that doing so would retard or complicate the main object in view, viz., that of opening out commerce by the Irrawady river as far as Bhamo, and from thence to Yunan. At present, however, I think that an officer might be sent to survey in the proposed direction, and after he has commenced his work, I might address Dr. Williams, instructing him to inform the Burmese Minister that a British officer is engaged on a survey in that part of the country.

6. The survey should include the levels of the route, and the best general line should be selected. Captain Sprye, it will be seen, carries his line on the map along the right bank of the Salween for a considerable distance beyond the emporium. It is doubtful whether the left bank would not be the better of the two. That will be one of the duties of the surveying officer to investigate and report on.

7. The survey should also include a report on the existing trade, by the routes followed, and there will be no difficulty for an officer who knows the country to acquire that information.

8. The surveying party should leave Rangoon early in December, and I trust that if the plan is approved by his Excellency the Viceroy and Governor General, that I may be favoured with early orders accordingly, as the preparations will take some time.

9. I beg to annex a list of the instruments which will be required.

(Government, No. 210 of 1861.)

From Lieutenant Colonel *A. P. Phayre*, Commissioner of Pegu, and Agent to the Governor General, to Lieutenant Colonel *H. M. Durand*, c.B., Secretary to the Government of India, Foreign Department, Fort William, dated Rangoon, 11th September 1861.

Sir,

I HAVE the honour to acknowledge the receipt of your letter to my address, No. 4,863, of 27th ultimo, with enclosed copy of a Despatch from the Secretary of State for India, No. 10, of 29th June last, regarding the establishment of an overland system of communication by telegraph and tramway between Pegu and Western China.

2. I understand from the enclosed correspondence that Captain Sprye has proposed to set up an electric telegraph wire to communicate direct between Canton and Rangoon, *via* Esmok. He proposes also to construct a tramway between Western China, or, say, Esmok and Rangoon for the conveyance of merchandise between the two towns.

3. In considering this project, I shall confine myself entirely to the consideration of the question as it bears upon the difficulties to be encountered, and advantages to be gained in establishing the communication between Rangoon and Esmok, or rather as far as Kiang Hung on the Cambodia River, I have not the means of gaining any information, or of offering any opinion as regards the practicability of carrying out this plan in the Chinese dominions.

4. In all plans of a similar nature for constructing works through countries under barbarous or half-civilised governments, it is probable that the difficulties which arise thereto from political causes, are greater than those which exist from physical causes. This is a trite observation, but the fact is often either suppressed or slurred over in propositions like the present,

present, so that it becomes necessary to advert to such obstacles, because if slighted at the outset they are likely to produce disagreeable consequences.

5. In the present case, I will first consider the proposition for an electric telegraph.

6. The present wire from Rangoon to Mungoo passes Shoe Gyeen, which is situated on the Sitang River, a little south of the 18th of north latitude. Captain Sprye makes Shive Gyeen his starting point for Esmok; the distances to be traversed between these two points must be estimated roughly, for the paths are mere tracks over hills, and through forests, and about one third of the way has never been travelled by an European; estimate the travelling distances, as follows:—

From Shoe Gyeen to the boundary, between the Siamese and Ava Shan States, on bank of the Salween River, about 19° 50' N. L.	-	200
From the above point on the boundary to Kiang Tung	- - -	200
From Kiang Tung to Kiang Hung on Cambodia, say	- - -	120
From Kiang Hung to Esmok	- - -	50
TOTAL		570

7. I believe it may be assumed that throughout the whole of the above distance there exists no serious physical difficulties to putting up a telegraph wire. The expense would be very great, but it could be done. There are, however, difficulties of another nature. After passing the place on the Salween, marked above as situated 200 miles distant from Shoe Gyeen, the country to the north is under the dominion of the Court of Ava; and I apprehend that Court would be very unwilling indeed to allow a telegraph wire to be run across it. Certainly it is possible that some means might be found to induce the present King of Burmah to accede to the proposal; but I should anticipate great opposition from himself, and all the influential people about the court. I shall, however, not fail to take any opportunity which may occur for endeavouring to ascertain the views of the Burmese ministers and others on the subject.

On the west bank of the Salween the country is under the control of Burmah for some 50 or 60 miles south of that point, but on the east of the Salween it may be assumed that Burmese territory, protected or tributary, does not commence until that place in 19° 15' West longitude on the Salween is reached.

8. I shall next consider the question of a tramway between the same points and by the route mentioned above.

9. In order to illustrate my remarks upon this head I beg to refer to a map which I had the honour to submit, with a Memorandum of the 25th June last.

10. Supposing the tramway to commence at Shoe Gyeen, in order to carry it across the mountain ridge which separates the Sitang river from the Salween, great engineering difficulties would have to be overcome. The present path leads for a considerable portion of the way through a mountainous country, where the ridges at the passes themselves are not less than 2,500 feet elevation. The tramway would then touch the Salween river about the latitude of 18° 50' N.; whether from thence it should be carried by the right or left bank of the Salween I have not sufficient information to form even a rough opinion. By the right bank it is known that the route is very rugged, as many hills have to be crossed. The road also would there go through the territory of the Eastern Karenee State, regarding which the Burmese authorities formerly had a controversial correspondence with the Commissioner of Pegu. They now consider that State as a part of their territory, and have shown themselves very jealous of our having any intercourse with the Eastern Karenee chief. Indeed they wish to claim the Western Karenee chief as their vassal. I feel certain that any mention to the Court Ava of a tramway by that route would at once arouse an antagonistic feeling on the part of the king and his ministers. If the route for the tramway is to be by the left bank of the Salween up to the point of 19° 50' on the Salween bank, or thereabouts, it is believed that the engineering difficulties would still be found to be considerable, but the political difficulties and objections would probably not be very great. It is still a disputed point, I believe, whether that strip of land east of the Salween belongs to the Red Karens or not; but east of the Salween, in that locality, the Court of Burmah would probably offer no strenuous opposition to the construction of a road between about the 19th and 20th parallels of latitude.

11. From about the 20° North latitude we have to consider the difficulties to be encountered in carrying a line of tramway in a north-east direction to the town of Kiang Tung. This is the town visited by Captain (now Brigadier) M'Leod, during his journey to Kiang Hung from Maulmain *via* Yunan, in 1836-37.

Notwithstanding that Captain Sprye appears to speak quite confidently and familiarly of the whole route from Shoe Gyeen to Kiang Tung, I will venture to assert that there is no account of an European traveller ever having gone over the ground which I am now about to remark on.

12. We are absolutely ignorant, except as regards general information, of the country lying between the point on the boundary of the Siamese and Ava Shan States on the bank of the Salween and the town of Kiang Tung. As before stated, the esti-

mated travelling distance between the two points is 200 miles, and the intervening country is believed to consist principally of mountain ranges with a general northern and southern direction, until the water-shed between the Salween and Cambodia rivers is reached.

13. If we may judge from two indications :—1st, the mountainous nature of the country, and, 2nd., there being no known existing route across this tract for traffic, the difficulties which lie in the way of constructing a tramway between the two points in question may be inferred to be very considerable.

14. I have already adverted to the probable jealousy and aversion of the Burmese Government to a road being opened out in this direction under British influence. Kiang Tung is a Shan State, tributary to Ava. The fears of that Government as regards our intercourse with the Shans in former times are well known. Those fears have become more intense since our occupation of Pegu. It is known that many of the Shan tribes would be glad to throw off their allegiance to Burmah, and the Government of the latter country would not willingly consent to any measure which they might think would facilitate such an event. The late flight of a whole tribe of Shans into the district of Tonngoo will probably tend to render the Burmese Government more sensitive on this point than before.

15. From Kiang Tung to Kiang Hung the route has been traversed by Brigadier M'Leod. His detailed report is, no doubt, to be found in the Foreign Office of the Supreme Government. I have only seen the abstract of it, published in the Journal of the Asiatic Society, for December 1837. The general description, by Brigadier M'Leod, of the country from Kiang Tung to Kiang Hung is, for ready reference, given below.*

16th. The general question still remains, whether there would be a probability of a tramway from Esmok to Rangoon being profitable, in a mercantile sense. That is a question on which we scarcely have sufficient data to decide. It appears certain, however, that, from the mountainous nature of the country, and the sparseness of the population throughout extensive tracts, that the expense of construction would be enormous. As to the amount of traffic, that from Kiang Tung, and places westward and southward, down to Rangoon, could not be expected to pay for the road. Whether the produce of Western China would more than make up for the deficiencies of the Shan States and Pegu in that respect I cannot venture an opinion upon. It would appear to be desirable to ascertain the state of navigableness of the Mekong or Cambodia river. I have lately understood that the river is interrupted by falls and rapids in more than one place between Kiang Hung and the sea. Brigadier M'Leod, indeed, refers to falls situated not far below Kiang Hung. The whole of the delta of the river also is now understood to be in the possession of the French, which of course, is disadvantageous to British interests. Still, that route to the sea may be easier for commerce than the one proposed by Captain Sprye, and, most probably, is so. Most certainly, Captain Sprye's letters do not tend to show that his information as to the route between Rangoon and Kiang Tung can be received with confidence.

LIST OF INSTRUMENTS.

One prismatic compass, with azimuth glasses and stand.

Two prismatic compasses, without stands, to be used in the hand, provided with leather cases and sling belts, so as to be worn over the shoulders.

One small pocket sextant, with similar sling and case, and a table of multipliers, engraved on the back, so as to be readily used in the field, for measuring width of rivers, &c.

One sextant, with artificial horizon, and complete for latitudes.

One chronometer.

One nautical almanac.

Two perambulators.

One boiling water apparatus.

One aneroid barometer, with thermometer attached.

(signed) *A. P. Phayre,*
Chief Commissioner, British Burmah.

* From Kiang Tung to Kiang Hung the country is both hilly and mountainous, with small, rich valleys, through which we daily passed, and in which there are numerous villages, all well peopled. These mountains, though not passable for carts, have good roads, but there is not "a spot of ground amongst them in which an encampment could be formed for a large force."

(Foreign Department—General.—No. 509.)

From Colonel *H. M. Durand*, Secretary to the Government of India with the Governor General, to the Chief Commissioner of British Burmah, dated Simla, the 29th July 1863.

Sir,

I HAVE the honour to acknowledge the receipt of your letter, No. 164, dated 26th June, relative to your proposal to make a survey from Shoe Gyeen to the western bank of the Salween river, between degrees 19 and 20 of North latitude, with reference to Captain Sprye's project to have a line of telegraph and tramway from Rangoon to Yunan in China.

2. In reply, I am directed by his Excellency the Viceroy and Governor General to state that it is quite right that any information respecting the character of the country through which the tramway and telegraph line in question would have to pass, which can be acquired by careful observation and without giving umbrage to the authorities of native states by the expedition proceeding up the Salween river, should be obtained and recorded. But such a survey as you propose would entail considerable expense; moreover, you have not answered any of the objections to Captain Sprye's scheme, whether founded on physical difficulties or the jealousy of native chiefs, which were so strongly urged in your letter of September 1861, and which prevented you from broaching the subject when at the Court of Ava last year. It appears to his Excellency to be especially important that we should not awaken the suspicions of that court at the present stage of our negotiations for giving effect to the treaty entered into with it last year. His Excellency cannot, therefore, until he has fuller information on these points, and some explanation of the grounds of the change of opinion which you seem to have undergone, sanction your proposal to carry out a systematic survey, a considerable portion of which would be conducted on foreign territory.

(Government—No. 219 of 1863.)

From Lieutenant Colonel *A. P. Phayre*, C.B., Chief Commissioner of British Burmah and Agent to the Governor General, to Colonel *H. M. Durand*, C.B., Secretary to the Government of India, Foreign Department, with the Governor General, dated Rangoon, the 14th August 1863. No. 3371.—Foreign —Political.

Sir,

I HAVE the honour to acknowledge the receipt of your letter, No. 509, dated 29th ultimo, relative to the proposed survey from Shoe Gyeen of a line of country over which Captain Sprye proposed to have a telegraph and tramway, as far as Kiang Tung on the Cambodia river.

2. With reference to the objections to Captain Sprye's plan on account of the physical difficulties to be encountered, I beg to state that, as far as my own opinion goes, I still consider those difficulties so great that they could not be surmounted except at an expense which would deter any sensible capitalist from risking any money upon the scheme. Possibly political events at some future period might render it advisable for the Government to sanction such a work. But that is not my reason for now advocating a survey of the line. My reasons are two-fold: first, that influential commercial bodies in England and Scotland have assumed on the incorrect information placed before them, that a tramway over the proposed line from Rangoon to the bank of the Cambodia river, is to be easily accomplished, and have applied for it to be sanctioned by Government; and, second, that I do consider it feasible and highly desirable to have a line of telegraph over the route in question.

3. With respect to the first reason, I consider that we should be in a position to demonstrate the incorrectness of the assumed absence of "engineering difficulties" along the line. This can only be done by a professional survey, but I do not consider that anything more than a reconnoitring survey is required, with heights calculated from the boiling point of water. This would be quite sufficient to show the nature of the country over which the line must be carried. Now, as the commercial advantages proposed to be gained by connecting Rangoon with Yunan are vast, I think it is desirable to show, on incontrovertible evidence, that the assumed facility for the construction of a tramway, in order to gain those advantages, is a delusion. Unless this be done, we remain in the position of opposing a grand scheme for a national object on the ground that it is not supported by credible evidence, while we have no better evidence, as far as the world at large is concerned, to offer against the assumptions of the advocates of that scheme.

4. In regard to a line of electric telegraph, I would, with deference, submit, that if it is considered desirable that a telegraphic communication should exist between Calcutta and Canton, I think it will be found that an overland line will be better than a sea cable line, and that the former may be established by the route now indicated. But I submit this view with deference for the consideration of his Excellency the Viceroy and Governor General as being, though not directly connected with the commercial interests of British Burmah, still as being worthy of consideration in connection with the plan now advocated.

5. I now beg to notice the jealousies of the native chiefs and of the Court of Ava in respect to a survey. Last year, when I had to negotiate a treaty with that Court, and when the predominant feeling which I encountered there was a desire to avoid any treaty without giving positive offence, or to include therein as little as possible, I certainly felt that any mention of a line of tramway across the tributary Shan States would only lead to further difficulties in the way of concluding a treaty. I therefore avoided the subject; and it is true that if the question were now to be opened to the Court of Ava, that I think difficulties would be thrown in the way, from mere general dislike to the opening of roads for passage of Europeans through their territory; but I do not think it is necessary to refer to the Court of Ava on the subject. After the survey party should have left, I would propose to intimate to the Burmese Government through Dr. Williams, that a British officer had been deputed to travel over the line of road towards the Cambodia River, and to trust that, under the existing treaty, every facility would be given to him. With regard to the native chiefs, Brigadier-general McLeod, who formerly travelled along a portion of the proposed route and reached the Cambodia River, is now here in command of the division. He informs me, that he would recommend the officer to go as an ordinary traveller, without any armed escort, and that he does not consider it likely that opposition would be offered to this progress.

6. In conclusion, I will refer to the recent presence of the king's son, styled Thonzai Menthia, as bearing on the subject of the jealousy of the Burmese Government with respect to our intercourse with the Shan States. Had the prince remained here, no doubt considerable suspicion would have existed in the mind of the King of Burmah. The prince had declared he intended to go to the Shan States, and his presence there would certainly have been connected in the Burmese mind with the proposed survey. But now that the prince has returned, and that the Burmese Government have seen that I exercised no influence to retain him here, but gave him what I considered good advice, I feel some confidence that they will be less disposed than usual to suspect a sinister design in the present plan.

(Foreign Department—General.—No. 687.)

From Colonel *H. M. Durand*, Secretary to the Government of India, with the Governor-General, to the Chief Commissioner of British Burmah, dated Simla, the 10th September 1863.

Sir,

WITH reference to your letter No. 219, dated 14th August, I am directed by His Excellency the Viceroy and Governor General to request that, as the subject to which it refers does not press at present, you will bear in mind the instructions communicated in paragraph 2 of my letter No. 519, dated 29th July, as to how information should be collected. Meanwhile Captain Sprye will be referred, through the Secretary of State, to the expedition up the Salween as preliminary to further enquiries.

EAST INDIA
(RANGOON AND WESTERN CHINA).

COPY of the DESPATCH of the late Governor General of India, Lord *Elgin*, relative to the proposed Construction of a COMMERCIAL WAY from *Rangoon* to *Kianghung*, referred to in the LETTER addressed by the Secretary of State for India to the Huddersfield Chamber of Commerce on 28 January 1864; with the Enclosures or Documents referred to in the said Despatch.

(*Mr. Baines.*)

Ordered, by The House of Commons, to be Printed,
30 June 1868.

[*Price 6 d.*]

367.

Under 2 oz.



